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An Address.¹

A QUEENSLAND MEDICAL SCHOOL AND SOME OTHER MATTERS OF INTEREST TO THE MEDICAL PROFESSION.

By E. S. MEYERS,
President, Queensland Branch of the British Medical Association.

THE occasion of the presidential address tonight marks a departure from the custom of the retiring President delivering an address, and will allow for the observance of one of our newer rules whereby, at the annual meetings, the incoming President will be the officer from whom the meeting receives an address.

The new rule appears to me to be a good one, as the duties of the President-Elect are much lighter

than those of the President, and the former should be glad to have one of the major tasks well behind him before he takes upon him the many cares of office.

As this year marks the centenary of the founding of our Association, it may be worth while considering to what extent we have fulfilled the purpose enjoined upon us by our illustrious founder, Sir Charles Hastings.

In promoting the medical and allied sciences we have before us a task of great magnitude, one on which the greatest of intellects have been employed, and which will not be finished as long as this world endures. All honour must be paid to the man who had the vision to conceive and the force of character to form an association such as the British Medical Association. So high is the prestige of the Association that "the B.M.A." is with very many a synonym for the medical profession. I am sure all will join with me in congratulating the parent body on their centenary and in wishing them future prosperity.

¹ Delivered at a meeting of the Queensland Branch of the British Medical Association on April 1, 1932.

In regard to our own Branch, then, how will the men and women of today be judged by those who come after them in regard to their achievement? Will it be said that we did not "measure up" to those who went before or came after?

It has been said by certain people that Queensland medical men suffer from an inferiority complex, that climatic conditions sap our vitality and render us incapable of any great achievement. It is possible that there is some truth in this assertion, but it is by no means the whole truth.

Since 1920 (the year in which a large number of medical men returned from active service) medical science in Queensland has made great strides. Clinical societies have been instituted at the various hospitals, post-graduate instruction in the metropolitan and country centres has become a regular feature of the Association's work, a school of anatomy has been founded. In the consummation of this last objective we must acknowledge the excellent work done by Professor E. J. Goddard.

Establishment of a Queensland Medical School.

On the other hand, there is a most important matter in which success has not been achieved, though the way was pointed out by Dr. Edgar Falkner twelve years ago and by Dr. Jackson much earlier still. I refer, of course, to the foundation of the Queensland Medical School.

In 1920 Dr. Falkner, in a paper to the Branch, wrote:

There is every possibility that in the course of the next few years a medical school will be established in Brisbane in connexion with the University.

Alas! the prophecy is not yet realized, though twelve years have passed, nor have we had any paper since that time on medical education. I should like to say emphatically that we could found a medical school immediately. I do not think the cost of establishing and maintaining a medical school is beyond our means, provided we do not slavishly follow others, but depend upon ourselves and are awake to the opportunities for success. One agrees, then, with Dr. Falkner in his statement: "With regard to accommodation, the less we spend on elaborate edifices the better." "The greatness of a school lies in brains, not bricks" (Osler).

One also agrees with Dr. Croll, who pointed out, in the discussion following Dr. Falkner's paper, that too much elaborate and expensive apparatus was used in teaching.

In the discussion on the paper Dr. Graham Brown drew attention to the fact that it would be necessary to determine whether the new school should be clinical or academical. Several other speakers took part in the discussion, and the tenor of their remarks was that the teaching should be clinical for the most part; that chemistry and physics should be included in the matriculation examination, and that in this way the medical course could be shortened by one year. This is a most important matter, to be taken up at greater length later.

I would say, then, the Queensland medical school should so train its students that they may very soon become sound general practitioners. If this idea is to be accepted, we must avoid mistakes made by others.

It is, of course, impossible to produce on graduation an "Admirable Crichton"; but, in regard to the art and science of his profession, the medical student should graduate at least as well grounded in these respects as the dental student, and such is not the case at present as far as one is able to judge.

Matriculation.

In regard to matriculation, Dr. Falkner advised that Latin should no longer be a compulsory subject. One would go further than this and say that there should be only one language that should be compulsory, and that should be English; and that the standard of examination should be a severe one. Other compulsory subjects should be the outlines of history, geography, physics and chemistry, with two or three other subjects to be selected from a number as the candidate desired. This would allow for a fairly liberal education; cramming should be deprecated and the adolescent should be allowed ample time for outdoor sport and exercise.

Medical Curriculum.

One understands that certain university professors object to the inclusion of physics and chemistry in school curricula on account of inefficiency in teaching. If such teaching is inefficient, the remedy should be in the hands of the university professors who should set the standard of school teaching and report to the authorities on any deficiencies and the means of overcoming them. The teaching in the schools should be upon general principles, and special application should be reserved for a time when the student is well advanced upon his medical course.

This aspect of the subject was fairly exhaustively dealt with by certain Sydney clinical teachers in 1920 in some proposals for the reform of the system of medical education. The signatories of the report are: Archie Aspinall, H. G. Chapman, J. L. McKelvey, Harold J. Ritchie, F. P. Sandes and S. A. Smith.

Here is the curriculum they recommend.¹

The entry "hospital" in the second and third term of the second year implies attendance at hospital for special demonstration on such subjects as the physiology of circulation, locomotion, temperature *et cetera*, and fractures and dislocations in their physiological and anatomical (but not clinical) aspects.

University professors will have much to gain by an acquaintance with the inmates of the wards of the hospitals if they wish to share problems in common with clinicians and students.

Each student, before being allowed to sit for a final examination, should be required to produce note books with clinical histories, notes and progress notes, made of a sufficient number of cases to insure that he has a practical knowledge regarding diagnosis, treatment and prognosis *et cetera* of the

¹ At this stage a lantern slide was shown.

common diseases of practice. The great Osler wrote as follows:

My firm conviction is that we should start the third year student at once on his road of life. Ask any physician of twenty years' standing how he has become proficient in his art, and he will reply, by constant contact with disease; and he will add that the medicine he learned in the schools was totally different from the medicine he learned at the bedside. The graduate of a quarter of a century ago went out with little practical knowledge, which increased only as his practice increased. In what may be called the natural method of teaching, the student begins with the patient, continues with the patient, and ends his studies with the patient, using books and lectures as tools, as means to an end. . . . Teach the student how to observe, give him plenty of facts to observe, and lessons will come out of the facts themselves.

In order to allow students opportunity to complete their note books, it would be necessary that during a portion of their course they be domiciled in hospital, as many of the conditions one sees in general practice are dealt with during the night or the early hours of the morning. To furnish these note books will necessitate far more work and endeavour on the part of students than merely listening (in the case of diseases of children) to ten lectures with demonstrations; but the value of the work will be enormously enhanced. The student will go out into the world on graduation with greater confidence and will be capable of much better work. Therefore, one would recommend that the time allotted for operative surgery, gynaecology, diseases of the eye, ear, nose and throat be much reduced and the time so gained be devoted to obstetrics, diseases of children, infant welfare work, preventive medicine and mental hygiene. Much time will be saved if students are prevented from wasting many hours witnessing operations, a time-consuming method of acquiring knowledge.

Medical Teaching in Queensland.

How is the teaching to be accomplished in Queensland? The answer to this seemingly knotty problem is by part-time lecturers; and I am of opinion that in almost all subjects we have the men here who are capable of teaching. The possible exception is physiology, and I am saying "possible" advisedly, as Professor Buckmaster, on his recent visit here, was quite emphatic that there was no reason why we should not commence teaching the subject immediately. In fact, if a recommendation of the Post-Graduate Committee of this Branch is approved by the Senate of the University, an M.S. (Queensland) will be obtainable shortly, and teaching classes in anatomy and physiology will be instituted at an early date.

On the clinical side we have men well qualified to teach. All we need to do is to make a beginning.

In regard to the teaching of medicine and surgery, we might well utilize the method of Melbourne Medical School, where, I understand, there are several part-time lecturers in these subjects. I think, though, that we can even improve upon their system of education in these subjects. How this is to be done involves a discussion on the present day tendency of appointing men to junior posts on the

honorary staffs of public hospitals (and the juniors in time become seniors) after they have completed their medical course and a period of hospital residency and then proceeded at once to a higher degree in medicine or surgery. The majority of these men have little or no experience of general practice. Many are of the opinion that men so trained will be likely to know more of the end processes of disease and less of its beginnings, and that they will not have the years of opportunity of study that produced a MacKenzie. Without going into the merits or demerits of a system that apparently has come to stay, would it not be wise (in order to make up for any possible deficiency in the teaching of medicine and surgery in the Queensland Medical School) to make provision for general practitioners who are well versed in the art of practice, to take a share in the teaching of these subjects?

You will notice that I have recommended a reduction in the amount to be taught to the student in operative surgery. This is a very delicate subject at the present moment, but it requires consideration. The fair-minded person will admit that in the future those who attain the F.R.A.C.S. should be well qualified surgeons. I very much doubt, however, so rigorous will be the test, whether the College will supply sufficient surgeons to meet the demand of the Australian public. It is, of course, essential, particularly in the country, that there should be a sufficiency of surgeons to meet the need for emergency work, and I would suggest that the University of Queensland should not grant the B.S. degree unless the student satisfy the authorities that he has spent an extra year (that is, a sixth year) devoting himself to the study of surgery. In this year, a post-graduate year, the young doctor should have the opportunity of assisting at operations *et cetera* and of performing the more usual operations, particularly those of "emergency surgery".

Preventive Medicine.

But it may be said at this stage: "Why all this bother about standards? Are not our standards of medical education the best in the world and our results of treatment of disease so good that there is little to worry about?" Let us look at Nature's little bill in the accompanying tables.

Some Causes of Death in Queensland.

Disease.	1927	1928	1929	1930
Typhoid fever	30	36	15	20
Measles	35	7	5	3
Scarlet fever	9	6	2	3
Whooping cough	54	28	21	38
Diphtheria	85	84	80	60
Cancer	732	768	810	748
Diarrhoea and enteritis (in persons under two years of age)	265	154	116	73
Diarrhoea and enteritis (in persons two years of age and over)	101	93	92	74
Appendicitis	73	72	73	72
Hernia and intestinal obstruction.	79	76	79	80

Some Causes of Death in Australia.

Disease.	1927	1928	1929	1930
Tetanus	67	83	98	73
Syphilis	134	171	146	166
Purulent infection and septicæmia ..	129	106	130	100
Diabetes	806	753	823	722
Thyroid diseases ..	165	143	166	180
Other diseases of kidney and adnexa	270	280	302	252
Biliary calculi ..	150	170	181	183
Diseases of bladder	120	116	121	106
Prostate	380	319	394	418
Gangrene	101	88	85	90
Furuncle	43	36	40	53
Phlegmon and Abscess	118	111	132	126
Diseases of urethra	35	36	37	33

In addition to the deaths, there is an enormous amount of undisclosed morbidity bringing suffering and misery to many in the community. Looking for a moment at the so-called surgical diseases, it appears that the time is ripe to consider surgery from the preventive aspect. As far as I am aware, there has been no organized attempt to deal with surgical diseases from the point of view of preventive medicine. It is, of course, realized that many factors must be taken into consideration when dealing with the prevention of these diseases, but it can be said with certainty that the better trained our general practitioners are (and this also applies to specialists in medical and allied sciences) the less will be the suffering and invalidity caused by the diseases in question.

I make no apology for bringing this matter before your notice, as I am firmly convinced that preventive surgery of the future will undoubtedly give much better results than much of our curative surgery of today. And, therefore, let us keep our standard of education high, and particularly so in regard to the training in preventive medicine. Time does not permit me to deal any more fully with a fascinating theme.

The Status of the Medical Profession.

Up to the present I have been dealing for the most part with matters that concern the promotion of medical science. I come now to the questions concerning the maintenance of the honour and interests of the medical profession. I think it can be reasonably claimed that the Association has upheld the honour and high tradition of the medical profession, but have we done sufficient to maintain the interests of the profession? Has the average young graduate of today a reasonable prospect to look forward to after his hard years of study? I am unable to give a definite answer to this question, nor do I know whether the Association can do so.

We hear from many quarters of unfair exploitation of the medical profession by various bodies. Dr. Emberton, of Melbourne, has written largely on this subject, particularly in relation to hospitals, and his papers should be read by all and examined in the light of Queensland experience. Unquestionably the practice of medicine is changing very rapidly. Is the statement that the general practitioner is the backbone of the profession still true,

or is it a shibboleth as far as capital cities are concerned? Is not the family practitioner tending to disappear, people taking advantage of the many socialistic medical schemes on the one hand, and at the other extreme succumbing to the desire to run direct to the specialist, whether he be physician, surgeon, obstetrician or the quack? If so, whether this state of affairs be allowed to continue, the profession itself must decide.

At the present moment it would appear that there is a great deal of exploitation of the medical profession, with consequent shrinkage of the amount of work available for general practice. This tends to undue competition between the component parts of the medical services, and this for many reasons is not in the public interest. Unless the profession sees to it that there are sufficient openings for young graduates who are well trained and willing to work, it is likely to lose its standing in the community.

Young graduates should, after a reasonable period of waiting, be able to earn sufficient income to enable them to take requisite holidays, spend time on post-graduate work, and make some return to the country which has been responsible for their education. Very many graduates have received scholarships and bursaries; it would be interesting to know how many of the recipients have made any monetary return to the State. It seems unreasonable to suppose that the members of the medical profession are less public-spirited than those of other professions, and the suggestion is made that medical practitioners are not nearly so well off as they were in pre-war days, and that this fact, coupled with high taxation and the institution of all sorts of socialistic schemes, does not make for public-spiritedness; and so I would urge that we take a definite stand in this matter.

The Medical Profession and the State.

As a profession we are already making a handsome present to the State each year in the form of honorary medical service to those who are destitute, but here our giving should stop, and it should be made a condition of honorary service that all others should pay something towards the cost of hospital upkeep and medical service.

The Royal Commission on Hospitals was of the opinion that all wage-earners should pay a small amount towards hospital maintenance, and they were supported in this by the British Medical Association. The amount asked for was very small, far less than the present unemployment tax. In regard to unemployment, we now find that, in addition to the usual amount of free work done by the medical profession in public hospitals, the medical care of the army of unemployed workers has fallen upon the shoulders of the medical profession, and of necessity the service is gratuitous.

In regard to the provision of medical treatment of injured workers insured under the *Workers' Compensation Act*, once again a free gift is made to the State by members of the medical profession.

This burden should not be carried by the medical profession. Other free services to the State are services in connexion with baby clinics, Poliomyelitis Committee *et cetera*. All these free services lead to a shrinkage of the ordinary fields of practice. Now is the time to take a stand in these matters, and the whole profession should be united and tell the authorities that they will treat only those eligible for the receipt of charity. We have the remedy in our hands, but it means organization and loyalty to one another, and this means absolute loyalty to the Association. An attempt should be made to give back to the general practitioner his rightful place in the community and to check the spread of socialistic experiments which sap the morale of the people and have been a factor in bringing the country to the verge of bankruptcy.

Here are the recommendations of the Royal Commission on Health (1926) as to what should be some of the normal duties of a general practitioner:

1. Notify to his district health officer on prescribed forms: (a) all births and still-births, (b) all deaths, (c) all cases of communicable disease prescribed by the regulations, (d) all cases of mineral or organic poisoning.
2. Order in writing methods prescribed by the health authority of concurrent and terminal disinfection in infectious cases.
3. Carry out methods prescribed by the health authority for the prevention of the spread of infection by contacts or carriers.
4. Carry out medical inspection of school children in particular districts by arrangement with the district health officer and education authorities.
5. Carry out other health duties as prescribed from time to time by regulations or as requested by the district health officer.
6. Be entitled to receive adequate fees.

Much water has passed under the bridge since the report of the Royal Commission was issued. The coordination of the health services of the Commonwealth is still work for the future. Though we now have a Federal Health Council, there is no place in it for representatives of the British Medical Association.

How can we in Queensland expect the recommendations of the Commission to be put into force when the important office of Commissioner of Public Health is a mere appanage of the Home Department, and the Commissioner (as far as one can judge) has no direct access to his Minister?

Are Osler's words still true: "Fully 25% of the deaths in the community are due to this accursed apathy, fostering a human inefficiency and going far to counterbalance the extraordinary achievements of the past century"?

If every general practitioner were given a position in the preventive health service of the State, it should be possible to stamp out diseases such as typhoid fever. This cannot come about while many pages of the report of an important commission merely take up space in official pigeon-holes.

Another Aspect of the Hospital Problem.

In regard to the admission of patients to hospital, whether as in-patients or out-patients, there should be medical admission to departments where govern-

ment medical officers should be in attendance to decide the necessity for hospital treatment of those unable to pay the fees of private practice. Except in case of emergency, nobody should be admitted to a public hospital unless on the recommendation of government medical officers or private practitioners. If this were done, it would soon be found that public hospitals would have less work.

However, there is one class of people (the so-called middle class) who have much to put up with in time of illness. Neither the State nor the medical profession has done much to lighten the burden for these people. Such a condition of affairs appears to be common to many English-speaking countries. Unlike the "lodge" patient, people of this class have no powerful organization to engage in collective bargaining on their behalf. A magnificent opportunity exists for the Association to assist these people, and a method of procedure that merits consideration is that of enlisting the aid of one or more of the large insurance companies in the provision of insurance against the cost of medical and hospital fees in case of illness. Time does not admit of the elaboration of a plan, but in such plan care should be taken to see that the control of the purely medical aspect should be in the hands of the Association. The provision of some plan of the nature indicated will go far towards the solution of the hospital problem.

As I have already indicated, others have troubles similar to ours and, for the benefit of those who may not have the pleasure of reading "Fundamentalism and Social Progress", by Allen B. Kanavel, of Chicago, I quote therefrom two paragraphs apposite to this discussion:

If we do not help to solve the question of competent reasonably-priced service, ill-advised, poorly conceived and unfortunately executed methods of service will be forced upon us with disastrous results to the public and the profession.

The solution of the problem of absorption of our medical service into the life of the people must come with the combined disinterested study of industry, labour, physicians and the public, but the initiative should come from the medical profession.

Finance of the Medical School.

I can now return to the method of financing the Queensland Medical School. In return for the many privileges that the medical profession should be granted by the State, the annual registration fee should be increased and the *Medical Act* should be altered to allow the Medical Board to pay annually moneys to the university for medical education and research. In this way we could endow various chairs of teaching. At the present moment there are several thousand pounds available in the McGregor Fund for the use of a medical school. This fund should be sufficient to endow a chair of physiology for at least three years. If the Queensland Medical School were founded in 1933, it would be possible to carry students on for three years with very little outlay indeed. Buildings should be available shortly at the Brisbane Hospital, which would serve as temporary class-rooms. The present

Anatomy School would easily accommodate medical students for at least two or three years.

There are other means of finance in sight. Members of the medical profession will remember that they rendered signal assistance in the formation of the Queensland Cancer Trust, and that this body is in possession of a large sum of money. If the weight of medical opinion were behind the proposal, it should be possible to persuade those controlling the trust that it would be wise to establish a professorship or lectureship in cytology. A knowledge of this subject should be possessed by medical students and practitioners, and such knowledge will do much to prevent the spread of cancer and to alleviate its ravages; and it is for this very purpose that the Cancer Trust came into being.

There are other possible sources of revenue, for example, insurance companies might be persuaded to make a grant to the Queensland Medical School, as it should be a good investment to them; the advent of a medical school should tend to prevent disease and increase the expectation of life.

Again, friendly societies enjoy privileges under an Act of Parliament that has been responsible for their establishing themselves in a very sound financial position. An addition to the act would allow them to contribute to a Queensland Medical School, and, by assisting in its establishment, they would be likely to improve their medical services. Furthermore, there is reason to believe that, once a school is established, it will receive a large measure of support from sources outside the State. I am convinced that, in the interests of our members, and for the far more important reason of the welfare of the public, we should forthwith found a Queensland Medical School. In support of this idea and in conclusion, I would remind you of the heartening words of Sir Richard Stawell, who said, in the course of the Halford Oration, of the establishment of medical schools in Brisbane and Perth: "As soon as the finances of the State permit, these schools should be established, if only on a modest scale; for teachers will be found, students will apply and progress will begin."

Each goodly thing is hardest to begin.

RÖNTGENOGRAPHIC OBSERVATIONS OF THE HUMAN SKELETON PRIOR TO BIRTH.¹

By H. FLECKER, M.B., Ch.M. (Sydney), F.R.C.S. (Edinburgh),

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of Melbourne.

In previous communications, entitled "Röntgenographic Observations of the Times of Appearance of Epiphyses and Their Fusion with the Diaphyses", an examination of some thousands of Röntgenographs of subjects of various ages, from the time of

birth up to the age of twenty-nine, was undertaken with a view to studying the appearance of epiphyses with special reference to their times of appearance and fusion. As the discrepancy between the actual dates recorded and those usually described is so pronounced, it has been considered worth while making a similar study of the skeleton prior to birth. Except in a few isolated instances where limited regions only have been investigated, it does not appear that such a study has been made by means of the Röntgenograph; and as this is clearly in many, though by no means in all cases, the most accurate method, it is believed this attempt will render the history of the development of the various bones of the skeleton more nearly accurate.

In former times investigation of primary centres was made by simple dissections or microscopical examination of sections, with subsequent reconstructions, and was necessarily a laborious and rather inaccurate method.

Mall describes a process of treating embryos, by rendering them transparent, thus exposing the bones clearly to view. He had collected some sixty specimens from 10 to 110 millimetres in length, treated in this manner, and has given a table of primary ossifications which appear to be much earlier than those in this series. The clavicle and mandible were noted in a foetus of 15 millimetres, maxilla at 16 millimetres, humerus and femur at 18 millimetres, radius and tibia at 19 millimetres, ulna at 24 millimetres, fibula and scapula, sixth to ninth ribs at 30 millimetres, and ilium and second to eleventh ribs at 31 millimetres; yet in a fetus of 30 millimetres examined by X rays, the clavicle and mandible alone are apparent. Is it possible that the primary centres are shown earlier by the method of Mall than by X ray examination, where the appearance is due solely to the extra calcium deposit?

Pryor has studied the Röntgenographs of 140 foetuses from ten and a half to thirty-eight weeks of age, 71 being male and 69 female, and reached the very unexpected result that in the ossification of the human skeleton the female is in advance of the male from the earliest appearance of centres of ossification in the embryo and throughout intra-uterine life, progressing from days to weeks and months. The examination by Pryor, however, was made more with the view to investigating the time of appearance of the centres for the calcaneus, talus, cuboid, distal femoral and proximal tibial epiphyses, no report being made as to the time of appearance of the other centres. That the centres in the female appear prior to those in the male, at or about the time of birth, is abundantly proved; but the data on which his conclusion that ossification "in the female is in advance of the male from the earliest developments of centres of ossification" is unfortunately not set out.

A series of about fifty fetuses of varying sizes, from 30 to 334 millimetres, has been examined. As it is impossible to ascertain the exact ages of these, the lengths only are considered, but the ages

¹ Read at a meeting of the Victorian Branch of the British Medical Association on February 3, 1932.

may be roughly estimated according to investigations made by other authorities.

The great bulk of material from which these observations were made, was obtained from the Women's Hospital, Melbourne, and the writer is indebted to the Radiologist, Dr. Colin Macdonald, and to the medical staff generally for much valuable assistance.

In two only of the series was air found to be present in the lungs, both in females of 298 and 315 millimetres in length respectively, although the lungs were airless in six male and five female fetuses of a length of 294 millimetres or longer. Air was likewise present in the stomachs of both of the former female fetuses, as well as in those of eleven other fetuses, of which six were male and five female, of various sizes, the smallest being a male of 147 millimetres and a female of 205 millimetres; in none of these had breathing commenced, as shown by the absence of air in the lungs. It is believed that the air is swallowed and it is consequently inferred that the fetus was living at the moment of birth. That the gas is not due to putrefactive processes is indicated by the fact that the fetuses were fresh, the stomach being always filled before any part of the intestines, and that no fetus smaller than 147 millimetres showed the presence of gas in the stomach. One can therefore infer that the process of swallowing air precedes (probably invariably) that of breathing, and that many fetuses (eleven in this series) swallow air, even when through some reason or other they are unable to breathe. It is, of course, possible that the manipulative attempts to force the new-born child to breathe merely cause it to swallow air, but it seems unlikely that such an attempt would be made on a fetus as small as 147 millimetres in length.

A male fetus 30 millimetres in length shows clearly the presence of both clavicles, the mandible and possibly the ischia, but no trace of the other bones of the skull, spine or limbs can be made out.

There is a gap between this fetus and the next one, of 70 millimetres, where all the long bones, namely, humeri, radii, ulnae, femora, tibiae and fibulae, have appeared, as well as the scapulae, metacarpals, metatarsals, proximal and distal phalanges of the hand and distal phalanx of the hallux. In the spine the bodies of the cervical vertebrae are all absent, although the neural arches are present. The bodies of all thoracic and lumbar vertebrae are present, as well as their corresponding neural arches, whilst two sacral vertebral bodies are present, but no neural arches. Eleven pairs of ribs are present, whilst the *ossa coxarum* are represented by the ilia alone. It is thus seen that the great majority of primary centres appear in the interval of growth between 30 and 70 millimetres, and it is regretted that material was not available to study the order of appearance of these centres.

Cervical Vertebrae.

Although the seven primary centres for the neural arches were present in every fetus of 70

millimetres in length, and larger, no centres had as yet appeared for the vertebral bodies at 70 millimetres, whilst a male fetus of 109 millimetres in length showed five pairs of centres for the arches of the lower five cervical vertebrae. All were present in fetuses of 165 millimetres or longer. In the cervical region, the neural arches appear before the vertebral bodies, thus differing from the caudal extremity of the spine.

Thoracic and Lumbar Vertebrae.

Primary centres for both bodies and neural arches were present for all twelve thoracic and five lumbar vertebrae in every fetus 70 millimetres or longer.

Bodies of Sacral Vertebrae.

Unlike the cervical vertebrae, the primary centres for the bodies of the sacral segments precede those for the neural arches. Centres for the bodies of the first two segments were already present in the male fetus of 70 millimetres, and although all five bodies were visible in the male of 90 millimetres, there were but three only in the male of 109 millimetres, four only in the male of 147 millimetres, and a female of 233 millimetres. The smallest female showing four centres measured 150 millimetres, and the smallest showing all five centres was 165 millimetres in length. There is evidently a wide variation in the time of appearance of these centres.

Neural Arches of Sacral Vertebrae.

The earliest appearance for the neural arches of the first sacral segment was seen in a male fetus of 109 millimetres and for the second segment in a male of 147 millimetres. The earliest for the third and fourth segments were noted for a female 150 millimetres and for a male 165 millimetres. The smallest male showing all five pairs of arches was 171 millimetres in length and the smallest female 205 millimetres. On the other hand, in considerably larger fetuses, up to 316 millimetres in a male and 298 millimetres in a female, the arches for the fifth segment had not yet appeared.

Lateral Mass of Sacrum.

The lateral masses of the sacrum are developed from three primary centres on each side. The centres for the first pair were noted earliest in a male fetus 180 millimetres long and in a female 220 millimetres long. The second pair were seen in a female 220 millimetres long, as well as in all larger specimens. The third pair was noted in the female of 220 millimetres (one side only) and in a male of 312 millimetres in length. It was not present, however, in a female of 315 millimetres or in a male of 334 millimetres.

Coccyx.

The only centre for the coccyx seen before birth was that for the body of the first segment. It was noted earliest in a female fetus of 262 millimetres and a male of 295 millimetres, but was not present in a female 324 millimetres or in a male 334 millimetres in length.

The Sternebræ.

The several centres for the sternum are by no means as regular in their arrangement as those of the vertebrae or of the ribs. The first three centres were noted earliest in a male foetus 180 millimetres in length; the earliest showing four centres was a male of 218 millimetres. Five centres were present in a male foetus 283 millimetres long, and the first to show six centres was a female 295 millimetres in length.

The Ribs.

All foetuses 70 millimetres and larger possessed at least eleven pairs of ribs. However, although 29 foetuses of 90 millimetres or longer had all twelve pairs, there were five, including a female 298 millimetres long and a male of 315 millimetres, in which only eleven pairs were present.

Cervical Ribs.

Cervical ribs were noted to be present in quite small foetuses, namely, in a female of 165 millimetres and a male of 134 millimetres.

Upper Limb.

Primary centres for the clavicles, scapulae, humeri, radii, ulnae, metacarpals and proximal and distal rows of phalanges were present in all foetuses of 70 millimetres length and over.

The Clavicle.

The clavicle was noted as the sole centre present in a male foetus of 30 millimetres in length. Mall records its presence in a foetus of 15 millimetres, but it is possible that those shown by his clearing method may not be demonstrable by X ray examination, owing to insufficient calcification. The condition known as craniocleidodysostosis evidently has its origin prior to the ninth week of foetal life.

Proximal Epiphyses of the Humerus.

In this series, centres for the head of the humerus were found very much earlier than is indicated by the literature. Spencer, for instance, found it in the days long before X rays were discovered, nine times in 40 foetuses weighing seven pounds or more, that is, in 22%; he could not find centres in two others weighing ten pounds twelve ounces and eleven pounds four and a half ounces respectively.

However, in the present series centres were quite clearly distinguished in a female foetus of 294 millimetres and a male of 295 millimetres. As out of ten foetuses of 294 millimetres and larger, six showed the presence of this epiphysis, it seems probable that the frequency of appearance of this centre before birth has been considerably under-estimated and that this centre ranks next in order of appearance to that of the distal femoral epiphysis and proximal tibial epiphysis.

Of 26 instances, including 10 females and 15 males, examined during the first year after birth, the centres were present in every case except three males, where the absence was noted on both sides, in one example at the age of six months.

Carpal Bones.

None of the carpal bones was seen in any foetus of this series, and no record of such has been discovered in the literature. Except for the possible exception of the capitate, these ossicles probably never appear before birth.

Capitate: The capitate is the first carpal bone to appear. Pryor found it present in a male child aged two days, and in a female aged four days, and from the size of these concluded that they must have been actually present before birth. However, he found the centre absent in a female aged three months and in a male aged seven months, although the hamate was present in each case, but it is unusual for the hamate to precede the capitate. The writer has noted its absence on both sides in a babe aged six months, in whom the hamate was likewise absent.

Middle Row of Phalanges.

The middle row of phalanges appear later than the other phalanges, and were noted in all specimens of 109 millimetres and longer, but were absent in the smaller foetuses.

The Lower Limb.

The primary centres for the ilium, femur, tibia, fibula, metatarsals, proximal row of phalanges and distal phalanx of the hallux were all present in foetuses of 70 millimetres and over.

Os Coxa.

The ilium was present in all foetuses of 70 millimetres and greater, and the ischium in those of 109 millimetres and over, whilst the *os pubis*, which appeared considerably later, was first noted in a male foetus of 165 millimetres and in a female of 205 millimetres, although absent in a male of 180 millimetres.

Distal Femoral Epiphysis.

Probably the distal femoral epiphysis is the first epiphysis to appear in the human subject, and was noted earliest in a female of 262 and a male of 263 millimetres. It was still absent, however, in a female of 280 and a male of 283 millimetres. It was found present in all eleven foetuses of 294 millimetres and over, as well as in all of thirteen instances in babes examined during the first year after birth.

Pryor noted the presence of epiphyses in each of two females within two days of premature birth at eight months, but it was not present in a male under similar circumstances. Of 43 boys and 48 girls examined during the first nine days after birth, this epiphysis was present in every instance except two boys.

Proximal Tibial Epiphysis.

The proximal tibial epiphysis is second in order of appearance only to that of the distal femoral epiphysis, being first noted in a female of 294 millimetres and a male also of 294 millimetres, but was absent in a female of 234 millimetres and in a male

334 millimetres in length. It was present in every one of twelve instances in babes examined during the first year after birth.

Pryor noted this centre present two days after premature birth at eight months in a female, but was absent in a male and a female after premature birth at eight months. Of 47 female and 42 male infants in the first nine days after birth, this centre was noted absent in seven females and thirteen males, being relatively twice as frequently absent in boys as in girls. Its absence was also noted in a girl aged twenty-five days.

The Tarsus.

The calcaneus, talus and cuboid (in the female only) usually appear before birth. The navicular and cuneiform have not been noted at this period.

Pryor found centres for both calcaneus and talus present in all three premature eight-months babes of both sexes, as well as in all of ninety other infants of both sexes during the first nine months after birth.

The Calcaneus.—The calcaneus was first noted in a male of 165 millimetres and in a female of 205 millimetres. It was, however, absent in a much larger female fetus of 280 millimetres, although present in eleven of thirteen fetuses from 171 to 280 millimetres in length, as well as in all twelve larger specimens.

The Talus.—The talus was seen earliest in a male fetus 180 millimetres long and in a female of 205 millimetres. Its absence was noted in a male of 224 millimetres and in a female of 280 millimetres, the latter being the only instance of 18 fetuses of 233 millimetres or larger.

The Cuboid.—The cuboid was found in two fetuses only, namely, a male of 295 millimetres and a female of 315 millimetres, but was absent in six others of a length of 294 millimetres or more.

Pryor found it present in a female two days after premature birth at eight months, but was absent in another female and in a male, both also prematurely born at eight months. He also examined 89 infants, 42 males and 47 females, during the first nine days after birth and found the centre present in 31 females and 11 males, that is, approximately 64% in girls and 25% in boys. It was, however, found absent in a boy aged thirteen days and in a girl aged 25 days.

The Third Cuneiform.—Although the third cuneiform bone has not been found in any of the fetuses examined, it was noted in every infant examined after birth.

The Middle Row of Phalanges.

The middle row of phalanges appears very much later than the corresponding phalanges of the hand, which are all present in fetuses of 70 millimetres or longer. In the foot they appear consecutively in order from the second to the fifth toe; thus the earliest centres for the second toe were seen in a male of 185 millimetres and a female of 220 millimetres; for the third toe, 171 millimetres in a male

and 220 millimetres in a female; fourth toe, 233 millimetres in the female and 275 millimetres in the male; whilst that for the little toe in the male was noted at 275 millimetres. The largest fetuses showing absence of these phalanges in the case of the second toe were 147 millimetres in the male and 165 millimetres in the female; third toe, 150 millimetres in the female and 234 millimetres in the male; fourth toe, 220 millimetres in the female and 234 millimetres in the male; and, lastly, for the little toe, a male of 224 millimetres and a female of 220 millimetres.

Distal Phalanges of the Second, Third, Fourth and Fifth Toes.

The earliest that the distal phalanges of the second, third, fourth and fifth toes appeared in each case was in a male fetus of 109 millimetres. In the case of the little toe it was present on one side only, and in a female fetus of 150 millimetres for the second, third and fourth toes, although absent for the fifth; but was present in all distal digits in a female of 233 millimetres length. In the male fetus of 70 millimetres the whole row was absent, whilst the distal phalanges for the fourth and fifth toes were not present in a male fetus of 165 millimetres, whilst in the female of 220 millimetres there were not yet any centres for the little toe.

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THE LOCALIZATION AND REMOVAL OF FOREIGN BODIES.

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THERE are probably few practitioners who have not had, at some time or other, considerable difficulty in removing what appeared at first sight to be an easily located and accessible foreign body. It has been suggested that localization and removal are perfectly simple with the usual method of skiagrams taken of the part, in two planes at right angles to each other. Sometimes this is so, but quite often this does not obviate a long period of fruitless ferreting. Thus McWhorter⁽¹⁾ quotes:

Case IV, G.G., female. Röntgenogram revealed needle deep in thenar eminence. Needle removed after tedious dissection under general anaesthetic.

Case V, Mrs. B. Röntgenogram revealed needle lying anterior to radius and ulna in wrist. Needle removed from among deep tendons in wrist after long, tedious dissection.

As McWhorter also states:

Many localizers have been advocated, some being accurate, but very elaborate, requiring special apparatus.

Notwithstanding these various aids, he writes as follows:

A summary of seventy-two cases at Bellevue Hospital of needles in hands and feet may serve as an illustration of the difficulty of removal by dissection. In 53% of the cases the needle could not be removed at the first operation. Of this number 13% were reoperated, 24% of the needles being removed at the second operation; 10% were operated twice without success; 5% of the needles were discovered at the third trial; and one patient was operated five times before the needle was found.

Twenty-nine years ago the following method of localizing foreign bodies in the tissues was described⁽²⁾ as "primitive localization". Notwithstanding, it was "invented" afresh by the writer as a result of experiences similar to the above, and given a trial extending over a period of some months in the Alfred Hospital, Melbourne. Experience showed that, when the method was used intelligently and with the attention to careful positioning of the part and accurate estimation of distances that it demands, localization was readily and accurately obtained, and that removal was an easy matter in the majority of cases.

The method commends itself in that the apparatus is so simple that any practitioner, confronted with a foreign body to be localized, can readily improvise it at a few minutes' notice from a piece of wire and some thread. Also, it is easy of application, and inexpensive.

It has been found that adverse criticism by some users has been the result of insufficient attention to certain precautions found to be necessary and described later.

The Apparatus.

The apparatus essentially consists of wire soldered so as to form a flat framework, to each side of which is attached a tape or a strip of adhesive strapping (Figure I). Any gauge of any metal

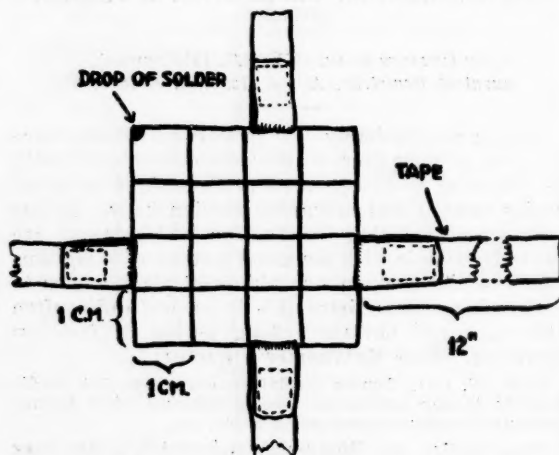


FIGURE I.

Showing the apparatus and its dimensions.

wire may be used, the squares may be of any size or number, and the tapes of any length. A useful set consists of one pair, of the dimensions shown

in Figure I (for hands, forearms, legs *et cetera*), and a second pair of six-millimetre (quarter-inch) squares (three squares each way) for fingers and toes. One of each pair should have a drop of solder in one corner for identification purposes. A localizer may be improvised by taking two pieces of wire (for example, ordinary electric light wiring with the insulation removed), each ten centimetres long, and bending each to form a rectangle one centimetre by four centimetres. These rectangles are then bound together with cotton so as to form a cross, to each arm of which is attached a tape or a strip of adhesive strapping.

Technique of Localizing the Foreign Body.

The technique of localizing the foreign body is best illustrated by describing its use in Case I.

The patient was admitted to hospital with the history of a chip of iron having entered his calf with fairly considerable force. He thought it to be anywhere between the point of entry and point A (Figure III). One localizer was tied on to the calf at the supposed site and the other at the point of entry and two skiagrams were taken. The first was taken with the limb placed so that the central ray passed perfectly vertical to the first localizer (Figure II), and the second film was taken to show the first localizer in absolute profile (Figure III). The second film (Figure III) thus shows the depth of the foreign body (in this case 18 millimetres or three-quarters of an inch). The first film (Figure II) then shows that the foreign body is 18 millimetres (three-quarters of an inch) directly below the centre of the top wire square.

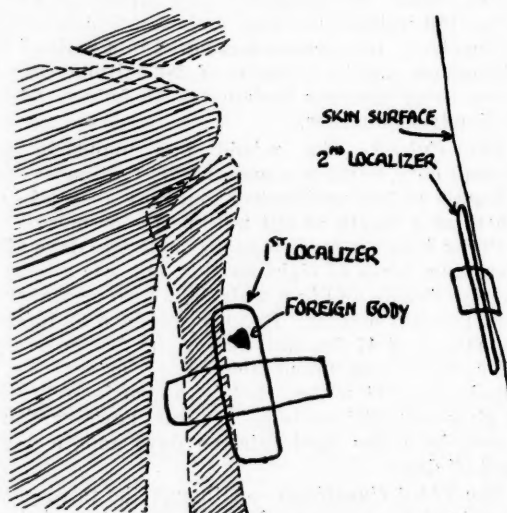


FIGURE II.

Case I. Lateral view, showing the position of the foreign body directly below the centre of the upper square of the first localizer.

It has been suggested that the film shows the part to be on a larger scale than it actually is. This is so certainly, but it can be seen that this source of error in calculating the depth of the object is of importance only when the X ray tube is close to the part and the part is some distance away from the film cassette. In films taken of hands, forearms and feet, with the tube distance the usual 75 to 90 centimetres (thirty to thirty-six inches) and the

part in close apposition with the cassette, this magnification source of error is negligible. The essential point in the localization of the object is that one skiagram must be taken with the limb so placed that the central ray passes exactly perpendicular to the plane of the localizer (the plane of the limb being entirely disregarded) and the other film taken with the ray parallel to the localizer so as to show it in profile. The success of the localizer depends on the accurate positioning of the part, and it is more satisfactory to the surgeon if he does this himself rather than if he leaves it to the technician. The first film gives the exact surface anatomy of the foreign body, and at the same time, the long axis of the foreign body should be noted, so that the jaws of the forceps can be inserted to embrace it most efficiently (as described later). The second film gives the foreign body's exact depth from the skin. Obviously, all distances and directions must be accurately judged, allowance being made (as described above) for the X ray shadow being varying degrees larger than the subject. Also, antero-posterior views are preferable to postero-anterior, because in the postero-anterior (when the localizer

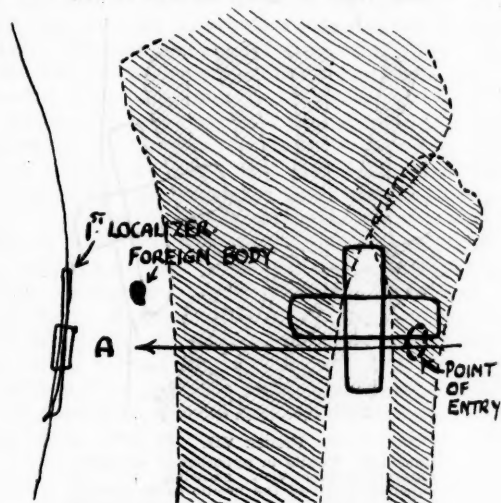


FIGURE III.

Case I. Postero-anterior view, showing: (i) Point of entry and approximate course and position of foreign body, (ii) the localizer and the subjacent skin in profile, (iii) the actual position of the foreign body. The foreign body's depth from the surface was estimated from this view to be 18 millimetres (three-quarters of an inch).

is between the limb and the cassette) there is apt, on occasions, to be a considerable amount of distortion of the tissues between the localizer and the foreign body through compression produced by the weight of the overlying tissues. This is particularly noticeable with localizing radium needles that have been lost in breast tissue.

The Removal of the Foreign Body.

To return to the case in which the localization has just been described.

The instruments having been prepared while the films were being taken, the localizers were removed. The cross-

wires, by the continued slight pressure they had been exerting on the skin, had left slight grooves and the surface anatomy of the foreign body in relation to these grooves (as shown by the films) was noted. The skin was then sterilized and the area in question infiltrated with 1% "Novocain" solution. The scalpel was passed exactly perpendicular to the skin at the surface overlying the foreign body, and for a distance equal to the estimated depth of the body (in this case 18 millimetres). A long pair of sinus forceps was then inserted with the jaws closed and in such a way that their gripping surfaces were parallel to the long axis of the foreign body. The jaws were opened just before the estimated site of the foreign body was reached, so that they embraced it, and so the object was withdrawn. The area was then flushed out with a hypodermic syringe full of acriflavine (one in 1,000) and a fomentation was applied.

If desired, instead of using the impression made on the skin by the localizer for indicating the position of the foreign body, the position may be indicated by a touch of some antiseptic stain, such as mercurochrome or iodine, or by a scratch with a sterile needle.

It will be noted that removal with long narrow sinus or artery forceps through a stab incision was used in this case.

The advisability of using this stab incision method depends first upon the importance of the anatomical structures intervening between the skin and the foreign body, and secondly upon the surgeon's anatomical knowledge. Thus it is possible that important structures such as tendons, nerves and blood vessels may be inadvertently grasped and pulled on. This was a possibility in Case II (Figures IV and V).

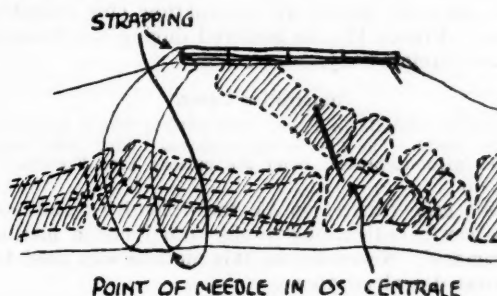


FIGURE IV.

Case II. Lateral view, showing the superficial end of the needle to be 1.25 centimetres (half an inch) below the skin surface, the deep end to be embedded in the os centrale, and the direction to be dorsally and slightly proximally.

In this instance it was decided that the needle was proximal to the superficial volar arch and to the ulnar side of the median nerve, and that the only structures subject to this risk were the tendons. To avoid the tendons the forceps were inserted so that their grasping surfaces were at right angles to the length of the tendons.

The greatest safeguard against grasping important structures is to keep the forceps closed until they have been inserted almost to the estimated depth of the object. Even then the jaws are only cautiously opened, an attempt being made first to feel the object with their tip. Even if removal under vision with wider dissection is decided upon, the localizer greatly facilitates matters by indicating a definite point to dissect towards.

In Case I the anatomical structures are unimportant, consisting only of a fair thickness of subcutaneous fat, the muscle sheath and some muscle fibres. Here there is no danger associated with using the stab incision method. The presence of fibrous strands (for example, palmar fascia) and of sheets of strong fascia occasionally makes removal difficult inasmuch as these tissues are apt to be grasped and regarded as being the foreign body.

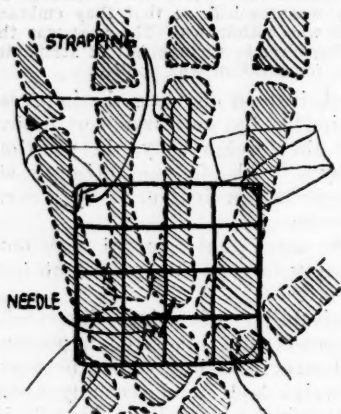


FIGURE V.

Case II. Antero-posterior view, showing the exact surface position and the direction of the needle.

The localizer, if sterilized before use, need not, if it does not act as an obstruction (for example, Case I, Figure II), be removed during the removal of the foreign body.

Illustrative Cases.

CASE II.—*Needle in Palm.* The patient was a boy, aged twelve years. The needle was removed under local anaesthesia without protest from the patient (see Figures IV and V).

This case illustrates all the difficulties and possible contraindications to the stab incision method of removal. Nevertheless, this method was used for reasons described above.

CASE III.—*Needle in Hypothenar Eminence* (Figures VI and VII). In this instance the localizer shows the superficial end of the needle to be half an inch directly under a point six millimetres (one-quarter of an inch) from the south-west corner of the central square along wire A-B. It also shows the long axis of the needle to be along a line drawn from this point to the tip of the styloid process of the radius. In this type of case particularly is the long axis of the foreign body important. The patient's impression as to the position of the needle was erroneous, and was used, in conjunction with skiagrams taken without the localizer, in the first unsuccessful attempt at removal. This first attempt resulted in an incision finally extended to 27 millimetres (one and one-eighth inches), after which, the localizer was devised and applied as described.

This localizer obviously may be used to determine the position on the surface of any deep structure, not necessarily a foreign body (for example, a sequestrum or a small bone abscess), provided it is to some extent opaque to X rays. Thus it may be used in the localization and removal of lost

radium needles, of screws used for fracture fixation *et cetera*.

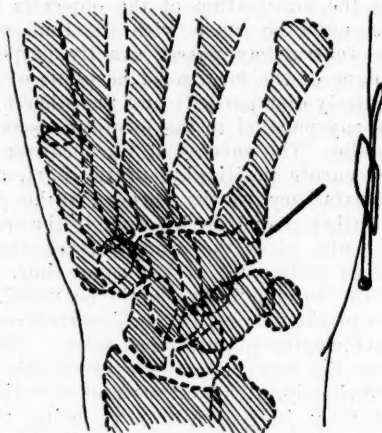


FIGURE VI.

Case III. Needle in hypothenar eminence, lateral view (that is, lateral inasmuch as it shows the localizer in profile), showing the superficial end of the needle to be 1.25 centimetres (half an inch) beneath the skin.

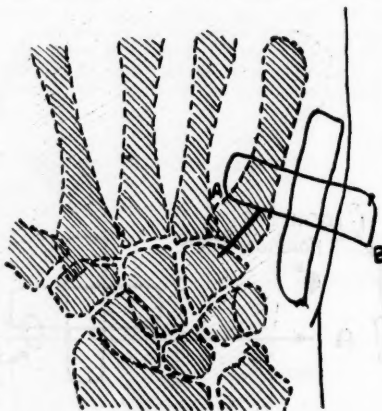


FIGURE VII.

Case III. Needle in hypothenar eminence, antero-posterior view, showing: (i) The superficial end of the needle to be directly below a point six millimetres (a quarter of an inch) from the south-west corner of the central square, along wire A-B; (ii) the long axis of the needle to correspond to a line drawn from its superficial end to the styloid process of the radius.

Summary.

1. Accurate positioning of the part, as described above, is essential.
2. Accuracy in the estimation of distance and direction is equally important.
3. The stab incision method of removal can be used in most cases.
4. In the majority, local anaesthesia is all that is required.
5. Always direct the patient not to untie or disturb the localizer until instructed to do so. One patient, as the radiologist turned away to shift a cassette, removed the localizer before his action was noticed.

6. Use the pair of localizers only if the foreign body is liable to be in an area larger than the area of one localizer, for example, Case I.

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⁽²⁾ S. H. Monell: "A Pictorial System of Instruction in X-Ray Methods", 1902, plate 70, page 228.

OBSERVATIONS ON DISTURBANCES OF GLUCOSE TOLERANCE DURING THE COURSE OF INFECTIONS.

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AND

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THE occurrence of glycosuria during the course of infections in patients who have shown no signs of *diabetes mellitus* previously, presents an interesting problem. Attention has already been directed to this in an earlier paper⁽¹⁾ by the statement: "The question as to whether the disturbed metabolism is the result of the infection or is a permanent state cannot be solved off-hand and may only be decided after many months of careful observation."

Within the past two years we have had the opportunity of studying seven patients in whom glycosuria developed for the first time during the course of some infective illness. These patients have been kept under supervision for many months and the glucose tolerance has been estimated at intervals in each. In all cases a mild disturbance was found either during or shortly after the course of the infection. Subsequently a definite improvement was found, and finally the tolerance curve returned to within normal limits.

Although comparatively uncommon, this problem is of considerable practical importance, as neglect may mean that an early *diabetes mellitus* is over-

looked, and the patient may suffer in consequence from lack of early treatment. On the other hand, the premature diagnosis of *diabetes mellitus* may mean unnecessarily a life of rigid treatment, as the tolerance to carbohydrate may completely recover soon after the infection subsides.

From our experience it would appear that the only safe course to adopt is to keep such patients under strict observation for some time and to estimate the glucose tolerance at intervals by means of the usual blood sugar curve. It is well to regard each patient as a potential diabetic and to treat him accordingly until the contrary is proved.

Labbé and Boulin⁽²⁾ have studied the effect of acute infections upon the glucose tolerance and conclude that some disturbance of carbohydrate metabolism is not at all uncommon during the height of fever. They do not discuss the process of recovery at any length and offer no satisfactory explanation of their findings.

The seven cases to be considered in this paper have come under observation during the routine practice of the diabetic clinic of the Alfred Hospital and are presented as examples of recovery of tolerance after various infective illnesses. Patients in whom an impaired tolerance was first observed during the course of an infection and who subsequently showed no improvement and appear now to have definite *diabetes mellitus*, do not fall within the scope of this paper and will not be considered.

In all the cases now to be described the tolerance to fifty grammes of glucose was estimated by MacLean's method after a preliminary fast of twelve hours. A sample of blood was then taken and further samples obtained half an hour, one hour, one and a half and two hours after the ingestion of the glucose.

The results obtained in the several cases are shown in the accompanying table.

CASE I.—A male, aged forty-four years, was admitted to hospital with acute appendicitis of forty-eight hours' duration. There was no history of any previous illness,

Table showing glucose tolerance percentages of seven patients.

Case Number.	Date.	Glucose Tolerance Curve Percentage.				
		Fasting.	$\frac{1}{2}$ Hour.	1 Hour.	1½ Hours.	2 Hours.
1	July 19, 1929	0.13	0.18	0.22	0.20	0.20
	August 15, 1929	0.11	0.17	0.19	0.21	0.20
	December 31, 1929	0.11	0.17	0.20	0.14	0.09
2	September 17, 1930	0.10	0.20	0.22	0.20	0.17
	November 19, 1930	0.08	0.15	0.11	0.09	0.10
3	September 20, 1929	0.09	0.18	0.19	0.16	0.15
	August 24, 1931	0.10	0.17	0.10	0.08	0.10
4	August 26, 1929	0.13	0.22	0.20	0.19	0.19
	October 23, 1929	0.13	0.23	0.24	0.19	0.16
	February 6, 1931	0.10	0.18	0.16	0.14	0.12
5	March 13, 1931	0.09	0.15	0.16	0.15	0.15
	June 10, 1931	0.09	0.15	0.11	0.09	0.09
6	June 14, 1930	0.12	0.14	0.23	0.21	0.18
	June 23, 1931	0.11	0.17	0.13	0.11	0.11
	December 16, 1931	0.10	0.12	0.14	0.12	0.10
7	September 10, 1931	0.07	0.18	0.27	0.24	0.24
	January 29, 1932	0.08	0.18	0.20	0.15	0.10

nor anything suggestive of antecedent diabetes and no family history of diabetes. The urine on admission was found to be loaded with sugar and acetone. Operation revealed a gangrenous appendix and localized abscess formation. During the first week of convalescence thirty units of insulin were required each day to keep the urine sugar-free. The dosage was then gradually reduced and when discharged from hospital he was taking ten units a day and was, in addition, on a strict diabetic diet. Within the course of the next few months it was found that he could omit the insulin entirely and later it was possible to substitute a qualitative dietary restriction for the exact quantitative one. Five months after his admission to hospital the glucose tolerance had returned to normal. Since that time the patient has remained in good health and has developed no symptoms of *diabetes mellitus*.

CASE II.—A female, aged twenty-one years, was admitted to hospital with an acute follicular tonsillitis of twenty-four hours' duration. The past history was clear with the exception of repeated sore throats for the last three years. There was no family history of diabetes. After four days the temperature became normal and the local condition in the throat subsided. On admission sugar was detected in the urine and remained until the patient was placed upon a restricted diet. A blood sugar curve suggested a mild diabetes and a qualitative restriction of diet was adopted for a period of two months. Another curve then showed that the glucose tolerance had returned to normal. Since that time the patient has remained in good health and, with an ordinary diet, there has been no recurrence of glycosuria.

CASE III.—A female, aged thirty-two years, was admitted to hospital with a chronic pelvic suppuration. Her past history was not suggestive of diabetes, nor was there any family history of it. She had suffered with *pruritus vulvæ* for many months prior to admission and glycosuria was found to be present, while a glucose tolerance curve revealed a mild disturbance. On a dietary restriction the urine became free of sugar and, following operative treatment of the pelvic sepsis, the patient passed from our observation. Two years later she responded to a request to report for investigation. During the past twenty months her health had been good and she had discontinued the dietary restrictions because she had felt so well. There had been no recurrence of *pruritus* since the operation, and a glucose tolerance curve showed that considerable improvement had taken place.

CASE IV.—A male, aged sixty years, was admitted to hospital having had a carbuncle on his neck for one week. There was no past history of diabetes, but for twelve months he had been feeling out of sorts and had been easily tired. No family history of diabetes was elicited. On admission, glycosuria was discovered, but was controlled by a strict regulation of the diet. Four weeks after the excision of the carbuncle a glucose tolerance curve suggested the presence of diabetes. Two months later, when the carbuncle had been completely healed for six weeks, another curve showed no alteration. In consequence the patient was regarded as a true diabetic and was treated accordingly. Fifteen months later, his condition having been so satisfactory, it was decided to investigate the glucose tolerance again. The curve obtained showed that the disturbance had completely subsided. For the past nine months this patient has remained well, with his urine free of sugar, on an unrestricted diet.

CASE V.—A male, aged nineteen years, was referred to the hospital by Dr. W. J. Saxton, of Hamilton, because of the occurrence of glycosuria during the course of an infection of the face. On examination at the time of admission the infective condition of the face had subsided. A glucose tolerance curve showed some delay in the return to normal and no sugar was found in the urine two hours after the ingestion of the glucose. It was decided to restrict the diet in view of the findings of the tolerance test. Three months later he presented himself for reexamination and a second tolerance test yielded a normal curve. Since that time the patient has remained well and his urine has been free of sugar.

CASE VI.—A female, aged sixty-five years, was admitted to hospital with chronic cholecystitis of three years' duration. She had also suffered from *pruritus vulvæ* for twelve months, during which time no urinary examinations had been performed. On admission glycosuria was present intermittently and a glucose tolerance curve was of a mild diabetic type. Immediately after the operation of cholecystectomy she was placed upon a strict diet, and recovery was uneventful. For twelve months her diet was severely restricted, and at the end of that period a second curve showed no abnormality. In consequence she was allowed freedom of diet, and on returning in another six months for further investigation, a third curve showed that her condition was still normal.

CASE VII.—A female, aged fifty-three years, was admitted to the Women's Hospital, Melbourne, with a chronic pelvic sepsis of many months' duration. Routine examination of the urine revealed the presence of sugar, which was controlled by dietary measures. Double salpingectomy was performed and the patient was transferred to the Alfred Hospital clinic for further observation. After four months of dietary restriction a marked change has occurred in the tolerance curve.

As yet there is no satisfactory explanation of this loss and subsequent recovery of glucose tolerance. The relationship of such cases as have been described, to *diabetes mellitus* is also at the present time a matter for speculation. Only by continued observation and increasing knowledge of the normal metabolism of carbohydrate will it be possible to obtain a correct appreciation of such disturbances as are here recorded.

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ALLERGY, WITH SPECIAL REFERENCE TO ASTHMA AND HAY FEVER.¹

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THE word allergy is used to designate all forms of specific sensitiveness except anaphylaxis in lower animals. Von Pirquet defines it as "a changed capacity to react to foreign substances".

Any symptom complexes are due to allergy which fulfil certain criteria (Rackemann and Colmes). These criteria are:

1. The symptoms are produced by contact with a particular agent foreign to the body.
2. Symptoms disappear when the contact is interrupted.
3. By skin tests the patient's specific hypersensitiveness can be demonstrated.
4. Each complex can be explained pathologically as due either to spasm of smooth muscle, to an increase in capillary permeability, or to both factors together.

¹ Read at the second annual reunion of the Residents' and Ex-Residents' Association, Royal Prince Alfred Hospital, Sydney, October, 1931.

Allergic manifestations show various clinical characteristics in common: (i) Asthma and hay fever present characteristic symptom-complexes. (ii) Other allergic manifestations occur frequently in the same patient. (iii) A positive family history of allergy occurs frequently. (iv) Positive results to skin tests are commonly obtained. (v) Eosinophilia is commonly observed when symptoms are present.

Incidence.

Accurate figures cannot be given in regard to incidence, but it is probable that 1% of the population suffer from various allergic manifestations.

Family History.

Among the first 150 patients studied at the Royal Prince Alfred Hospital Allergy Clinic we found 63% with a positive family history. The figure given by George Bray in his study of a much greater number is 68.5%. Of these 51.5% had a unilateral and 17% a bilateral history of allergy. He states that: (i) It is a tendency of diathesis which is transmitted as a Mendelian dominant. (ii) The greater the heredity, the earlier are symptoms manifested. (iii) The clinical manifestations are intimately correlated and are definitely interchangeable. However, with a pure history of a single manifestation the more likely is it to remain true to type in the offspring. (iv) Heredity plays very little part in determining the age at onset of symptoms during the first decade. (v) The female transmits twice as often as the male.

Balyeat considers that allergic patients develop a general resistance to infective diseases far above the normal, and are generally above the normal in intelligence.

Our observations have led us to the same conclusion independently of this author. Balyeat further believes that allergic patients whose symptoms become manifest in the first or second decades seldom develop tuberculosis.

There is no characteristic physical "make-up" of the allergic patient, and observations lead us to believe that the children are often late in developing secondary sexual characteristics. This may be due to some primary or secondary endocrinological factor in allergy.

Procedure When Confronted with an Allergic Patient.

A careful and detailed history of the patient and his environment is of paramount importance. It is essential to determine, if possible, when and where the symptoms begin—at a particular season of the year, day or night, in relation to meals, at home or at work, while sweeping, gardening or exercising in some other way.

It is necessary also to keep in mind the commonest allergic substances (allergens), not necessarily proteins.

The allergens are:

(1) Inhalants: (i) Pollens of grasses and flowers in season, (ii) animal emanations, (iii) vegetable

powders, such as face powder and insecticides, (iv) dust—a common cause in city dwellers.

(2) Foods. In dealing with the young child and most patients with urticaria: wheat, milk, eggs, raw fruits, and vegetables.

(3) Bacteria, that is, infections.

Often a patient will volunteer the information that the dust when sweeping, or the "fluff" from a kapok bed, or certain flowers will cause an attack of asthma or hay fever. If a positive reaction develops on the skin when tested with the supposed allergen, we may reasonably come to the conclusion that that allergen is the cause or one of the causes of the condition. It requires a detailed history and investigation on the other hand to determine the causal agent or agents in urticaria, particularly if it is due to kapok. A thorough examination of the nose and throat is essential in asthma and hay fever. Septic foci and mechanical obstruction must never be overlooked.

The next procedure is testing the skin for specific substances.

Skin Testing.

Skin testing is largely responsible for the clinical appreciation of allergic conditions. The reaction obtained from tests depends on the presence of an antibody (reagin) in the cells. Skin testing must not be regarded superficially as a simple procedure. The application of some foreign substance to a scratch on the skin does not solve the problem. Nevertheless, this form of test compares favourably with the Wassermann and agglutinin tests, provided always that it is intelligently interpreted (Ratner).

Skin tests cannot take the place of a careful history of the patient, but must be considered in conjunction with it.

The skin reactions persist after desensitization, spontaneous or artificial, and may represent a past phase in the life of the patient. One patient, sensitive to wheat, showed a gradual decrease in skin sensitivity while undergoing desensitization. This is not the rule, however.

Reactions vary in intensity at different sites on the skin surface. It is therefore advisable to select the same site in each patient and, of course, the forearm is most convenient.

Positive skin reactions are more common in the first two decades of life. Food sensitivity is common up to the age of ten years. After that the inhalants become more common. The bacterins are frequently positive in patients past middle life, particularly in asthma commencing in middle life.

Multisensitivity is not infrequent. When multiple reactions are obtained, careful attention to the history and environment is essential in determining the causal agent or agents from the whole group of substances giving the positive reaction.

Positive reactions are the rule in hay fever, asthma and juvenile eczema, but infrequent in urticaria.

In some cases of clinical allergy a positive reaction is absent, due to the absence of skin test antibodies.

The intensity of the reaction obtained does not indicate the underlying degree of sensitivity.

Positive results from food tests may or may not be of clinical importance.

Despite absence of reaction to a skin test, specific food sensitiveness may exist. It is advisable to do a "patch" test before calling a patient "skin-negative" to a certain food.

Some few patients show an erythematous reaction to the scratch or cut before application of the test substance. This is due to the liberation of histamine-like bodies in the skin on account of the trauma. If left for about half an hour after the preparation, the erythema will subside and permit the test to be completed.

Severe generalized reactions, for example, an attack of asthma, will often lead to temporary failure of skin tests to yield a reaction. Also an injection of adrenalin will often cause no reaction to appear instead of giving rise to a positive reaction. It is obvious, then, that the time to do the testing is not immediately after an attack or following adrenalin injections to stop the attack.

The application of test substances to the skin may cause a general reaction by absorption. For this reason it is advisable not to do too many at one time.

Group reactions are found in varying degrees to the pollens. Skin tests rarely give positive results in infants under four months.

Freshly prepared extracts must be used.

All skin tests must be carefully controlled.

Methods of Skin Testing.

The following methods of skin testing may be described.

The Intradermal Method.—The intradermal is a very sensitive method. It is used for the bacterins and to confirm doubtful reactions to the "cut" method, when 0.01 cubic centimetre of extract is injected.

The Scratch Method.—In the scratch method a scratch is made in the skin, insufficient to draw blood. This causes a great deal of local trauma at times.

The Cut Method.—In the cut method, with a sharp knife a shallow incision three millimetres long is made into the skin, but not sufficiently deep to draw blood. This causes less trauma, is very simple, practically painless, and is the method of choice for surface application.

The Patch Method.—The patch method consists of the application of the test substance to the unbroken skin for a period of twenty-four hours.

The forearm having been cleansed with spirit, the cuts are made and the allergens are applied. These are gently rubbed into the cut with a loop or applicator. After twenty minutes the reading is taken. A positive skin reaction is a red areolar zone with or without

a central wheal. The red zone varies in size from 6.0 millimetres (a quarter of an inch) to more than 5.0 centimetres (two inches), according to the intensity of the reaction in the individual. Alexander and McConnell state that a positive skin reaction represents a typical lesion essentially similar in section to those from the nose, bronchi and bowel during acute allergic reactions.

Test Substances.

Test substances are numerous. We select the most common substances for a routine test, using the Commonwealth Serum Laboratories' "D strength" extract—rye grass, house dust, duck feathers, horse dander and kapok; also fresh linseed, milk, egg and orris root (the basis of toilet powders), and fresh dry pollen of Cape weed, plantain and Kentucky blue grass (*Poa pratensis*). Many other tests are carried out on patients when the history calls for them, and the patients are frequently requested to bring in a sample of their own kapok and house dust for further testing. The control is carried out by applying Coca's solution to one of the cuts. This is a phosphate solution and is also used when applying the powders, foods and dry kapok.

Asthma.

Asthma is a constitutional condition, and is no more a local condition of the lungs than urticaria is a disease of the skin. It is one manifestation of hypersensitiveness, and other allergic conditions are different manifestations of the same phenomenon. The onset of asthma is most frequent in the first year of life and declines then to the age of ten. Frequent "colds" or bronchitis in a young child are very suggestive of commencing asthma, particularly if there is a family history of allergy. Bray gives the sex incidence of asthma from birth to puberty, males to females, greater than two to one. From puberty onwards it is less than one to one. This points to the fact that puberty exerts a beneficial effect in males which is not seen in the case of females.

Whether or not a person will develop any allergic manifestation depends upon:

1. Extent of exposure to various allergens. Continued observation should be exercised over the probable allergic child. Feather beds and cushions, eiderdown quilts and old kapok mattresses should be destroyed.
2. Extent of previous lung damage. Many of the asthmatic children show a considerable amount of lung fibrosis on X ray findings. These patients are the most difficult to treat effectively.
3. The presence of focal infections—tonsils, adenoids, dental caries and, I believe, chronic hepatic infection.
4. The presence of a family history of allergy.

Classification.

It is difficult to find a good classification of asthma in any of the text books. An attempt is made here to classify it in an aetiological manner. It must be clearly understood, however, that two

or more of these types of asthma are not infrequently found to be associated in the same individual. There are five types:

1. Nervous asthma.
2. Hyperpietic asthma.
3. Asthma with upper respiratory infection.
4. Asthma with mechanical nasal defect.
5. Allergic asthma: (a) inhalant, (b) bacterial, (c) due to foods, (d) due to drugs.

The first of these types may be purely nervous or psychogenic in origin; nevertheless, I believe the numbers of these are greatly overstated. It is recognized that there is a nervous factor of varying degree in the majority of asthmatic people, and every effort must be made by the physician to gain the confidence of the patient and minimize the damaging influence.

We see a small number of patients with asthma in whom we find a raised blood pressure and no further abnormality. General measures directed to the lessening of the pressure bring about complete relief of asthmatic symptoms. This will explain the reason for the inclusion of type two. There is undoubtedly a psychogenic element in these cases of asthma.

Blood pressure readings for the most part are low in asthma, and the prognosis in those cases with persistent hypertension is poor. These hypertensive patients often show strongly marked skin reactions and are not included in Type II.

It is advisable to have a thorough nose and throat examination of every asthmatic patient for antral infection and for polypi, the result of old infection. Any other mechanical defect of the upper respiratory passages must receive due consideration.

The Cause of Attacks.

The contact with a specific allergen (to which the patient is sensitive) will precipitate an attack. Furthermore, there are many non-specific causes which probably act by irritation of the mucous membrane of the respiratory tract on nerve endings which are too easily stimulated in the asthmatic. Some of these non-specific causes are: smoke, perfume, westerly winds (both cold and hot), a barometric pressure over thirty inches, sneezing, laughing and physical exertion—thermal, mechanical and physiological factors.

When the history and physical examination have been completed, skin tests performed, and special examinations made, for example, examination of the nose and throat, X ray examination of the lungs, and sputum tests if desirable, we turn our attention to the line of treatment to be adopted.

Treatment.

Methods of treatment may be described shortly as follows:

The substance to which the patient is sensitive is eliminated and the allergens are avoided as far as possible. Foods may be denatured by heat in some cases, for example, egg-sensitive patients may tolerate eggs which are boiled for thirty minutes. Milk-sensitive people may tolerate evaporated milk

or milk which is kept at boiling point for half to one hour.

Spontaneous desensitization takes place at times. A child may vomit food which is objectionable and in this way little or none is absorbed.

Specific desensitization by mouth is usually unsatisfactory.

Specific desensitization by injection is very useful for the inhalants and will be dealt with later.

Elimination diets may be used.

In regard to non-specific treatment, the following methods are used: (a) Peptone injections. (b) tuberculin injections with old tuberculin and bacillary emulsion. Some good results are obtained by this method. (c) Deep X ray radiation is of great value in a number of cases. (d) Operative methods such as vagotomy or ganglionectomy; 30% of patients are relieved by this method. (e) Glucose given by mouth or by injections. (f) Stock vaccine therapy, for example, mixed influenza vaccine.

Autogenous vaccine therapy lessens the sensitiveness.

The urinary "protease" therapy of Oriel and Barber has proved to be very disappointing in cases of asthma under our administration. Dr. Durie has carefully prepared this protease according to the printed instructions of the authors, but we have been unable to obtain positive skin reactions by injection of the protease in more than about 50% of cases. Furthermore, we used the protease, in dilutions for testing, much stronger than these authors use.

Nasal and sinus disease should be treated conservatively in conjunction with the treatment of asthma. Unless tonsils are very filthy, or unless there is frankly purulent antritis or polypi, operation should be avoided until other methods have been tried. If a patient gives a positive skin reaction to inhalants, it is best to desensitize him first, as many patients are worse after operation. Bullen states that "tonsillectomy does not aid in improving the results of treatment of nasal or pulmonary manifestations of allergy", and that "nasal or pulmonary allergy is as likely to occur in an individual whose tonsils have been removed as one who retains his tonsils".

Further methods of treatment include the following. (i) Antispasmodics should be used during the early treatment by desensitization. (ii) Dilute hydrochloric acid in doses of half to one teaspoonful is frequently of value in asthma. It is given in half to one glassful of water to be sipped with each meal. Bray has found a surprisingly high percentage of asthmatics with achlorhydria and hypochlorhydria. (iii) The bowels should be kept well open. Avoidance of heavy meals and suppers is of value to the asthmatic. (iv) Endeavour to get the patient to gain confidence in himself and to overcome the fear and alarm which are so frequent at the beginning of an attack and which make the attack much worse than it should be. (v) Breathing exercises of the proper type are of great value (Brown). These consist of passive

expiration and rapid inspiration for five minutes or more, three times each day. This type of breathing will often abort an attack, and it is of value in emphysema also.

Specific Desensitization.—There is often an association of an infection, such as bronchitis or upper respiratory infection, together with the hypersensitiveness to inhalants. This infection prevents desensitization with a specific allergen, found by skin test, from doing its full work and bringing about complete relief of symptoms. For this reason treatment of the infection must be carried out concurrently or immediately after the course of desensitization.

Desensitization may last for one season only, perhaps two or more, so it will be necessary to repeat the course. It is best in seasonal asthma to desensitize the patient for about three years in the pre-seasonal period. In other words, for pollen-sensitive patients, commence treatment well before pollination begins each year. An alternative to this is a method of giving a monthly injection of the extract between the pollen seasons. The dose for this monthly injection is the optimal dose of extract for that patient found during desensitization.

The Commonwealth Serum Laboratories prepare extracts for use in this country. The extracts are made up in four dilutions, "A", the weakest, "B", ten times stronger than "A", "C", ten times stronger than "B", and "D", ten times stronger than "C". Sutherland has clearly outlined the method of use of these extracts. When skin tests show a patient to be hypersensitive to some foreign substance (allergen), a course of injections is given with extract prepared from that substance. If a patient shows a sensitivity to more than one substance, a combination of extracts is used for the injections. The interval between injections is usually three or four days, but the weaker strength extract may be given more frequently.

If skin tests are carried out with the Commonwealth Serum Laboratories' extract in capillary tubes, the batch number on that tube which gives a positive reaction, should be quoted in ordering the extract for desensitization and used throughout the course of injections.

The injections are given subcutaneously, or intradermally if the amount is small, and injected into the upper arm.

The scheme of treatment is as follows:

"A" Strength Extract.

- 0.1 cubic centimetre.
- 0.2 cubic centimetre.
- 0.4 cubic centimetre.
- 0.8 cubic centimetre.

"B" Strength Extract.

- 0.1 cubic centimetre.
- 0.2 cubic centimetre.
- 0.4 cubic centimetre.
- 0.8 cubic centimetre.

"C" Strength Extract.

- 0.1 cubic centimetre.
- 0.2 cubic centimetre.
- 0.4 cubic centimetre.
- 0.6 cubic centimetre.
- 0.8 cubic centimetre.

In some patients it may not be possible to reach the last figure without harm to the patient. The optimal dose may lie between 0.5 and 0.8 cubic centimetre of the "C" strength. In others the "D" strength may be used in addition, by increasing the dose very carefully. Special attention should be given to the reaction caused by each injection. In the weaker strengths there is usually little or no local reaction, but, as the course proceeds, redness and swelling will appear at the site of the injection within a few minutes. When the local reaction is over 5.0 centimetres (two inches) in diameter (and it is sometimes extensive and oedematous), it is advisable to moderate the following dose and so depart from the scheme laid down. Each patient must be watched carefully, and attention to the size of the local reaction or any general reaction will determine the amount of the next injection given. The optimal dose is that which will keep the patient free of symptoms, and should be continued at weekly and then at fortnightly intervals for a short time before the treatment is discontinued.

If the injections are too strong, there will frequently be found a generalized reaction, a typical attack of asthma, developing soon after the injection. At times this is delayed from one to twelve hours after the extract is given. Every effort must be made to avoid such a reaction caused by an overdose. There is no rule to guide us, but careful attention to the local arm reaction and to the statements of the patient will guide us in giving the next dose to avoid a general reaction. Treatment of an overdose is the same as that for an ordinary asthmatic attack. A tourniquet around the arm and an injection of adrenaline into the same site as the extract will help to prevent rapid absorption.

Vaccine Therapy.—Autogenous vaccines are of value in the treatment of asthma. Great care must be exercised in the dose given. Severe prolonged asthmatic attacks are easily precipitated by overdosing. I believe in giving a small initial dose, followed by injections to produce a mild local reaction on the skin surface, and then in continuing this dose as long as it continues to produce such a reaction. When the skin reaction to this dose becomes negligible, the dose should be cautiously increased till a mild local reaction again occurs. This procedure is carried out over a long period of time by giving injections every week.

Hay Fever.

Hay fever frequently precedes asthma, and when the asthma comes the hay fever often disappears. In such cases, during desensitization and when the control of the asthma is effected, the hay fever often reappears.

During attacks of hay fever, nasal obstruction is usually marked, and the mucous membrane appears pinkish grey, swollen and boggy. The discharge varies from being thin and watery to thick tenacious mucus.

Types.

There are two types of hay fever: (i) Seasonal hay fever, due to pollens of grasses and flowers. (ii) Perennial hay fever, due to chronic infections, foods, dust and other inhalants ever present in the environment, or to two factors combined.

Investigation.

Hay fever is investigated along the same lines as asthma, and a nose and throat examination is essential.

Treatment.

Acid therapy is valuable. It is best to treat the nose and sinuses conservatively; an ephedrine or chloretone spray gives great relief. Desensitization to inhalants (found by skin tests) should be carried out by injections as outlined in the treatment of asthma, and patients with seasonal hay fever must have the pre-seasonal course of desensitization. Overdosing in hay fever causes irritability of the nose and increased nasal discharge, and, of course, should be avoided.

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Reports of Cases.**THE NEPHROTIC TYPE OF BRIGHT'S DISEASE:
THREE CASES IN YOUNG PEOPLE.**

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Few conditions are at present such a source of controversy as nephrosis. The term was first suggested by Müller⁽¹⁾ in 1905 as a name for the degenerative as opposed to the inflammatory type of kidney change. It was adopted by Volhard and Fahr⁽²⁾ in their own epoch-making monograph of 1914, and the conception was further elaborated by Epstein⁽³⁾ from 1914 onwards. More lately it has been revived by Fishberg,⁽⁴⁾ Addis⁽⁵⁾ and Van Slyke,⁽⁶⁾ while the condition in children has been described by Clausen⁽⁷⁾ and Holt.⁽⁷⁾

By the earlier writers the essential features of nephrosis were held to be oedema and the excretion of urine loaded with albumin, but without increase in blood pressure or nitrogen retention—the "hydræmic" nephritis of Widal.⁽⁸⁾ As further elaborated, especially by Epstein, it was shown that in such cases there was a high blood cholesterol content, a lowered blood albumin content and a lowered basal metabolic rate.

The matter has been advanced a step further by the work of Leiter⁽⁹⁾ and of Shelburne and Egloff.⁽¹⁰⁾ These

workers bled laboratory animals (dogs and monkeys), separated off the corpuscles, suspended them in Locke's solution and reinjected the suspension. Thus the animal retained a sufficiency of corpuscles to maintain life, but the plasma proteins could be reduced as desired. The result was that when the plasma proteins fell below 3% oedema appeared. This oedema could be greatly increased, maintained or diminished by variations in the sodium chloride intake and the amount of protein food administered. An oedema, apparently the analogue of the "hunger-oedema" described by various observers, could be produced (Leiter) by low protein feeding alone.

A point of very great interest, bearing out the work of Blum, is that potassium chloride did not increase the oedema when established nor cause it to appear in borderline cases. Thus Starling's theory of oedema was definitely supported. Most significant of all was the fact that the oedema produced was the low protein (0.1%) type found in "nephrotic" conditions, and not the high protein type of cardiac and acute nephritic oedema, 1% to 3% of protein. The relative percentages of albumin and globulin in the blood underwent a profound change; from 3.2% to 1.9% they became 1.0% to 1.2% or less, and at the 1.3% to 1.9% level oedema appeared.

In recovery the globulin returned to normal long before the albumin, for example, 1.6% to 2.2%, but with a total protein over 3.5% there was no oedema. The explanation suggested is a more rapid replacement of the globulin as opposed to the albumin.

A similar fall is characteristic of the blood in nephrosis. Fishberg states that the normal ratio of 1.5 or 2.5 to 1 may fall as low as 0.2. But neither Leiter nor Shelburne and Egloff were able to find any rise in the blood cholesterol, any albuminuria or any constant kidney changes, and neither claim that they have produced a "nephrosis", but nothing more than a "nephrotic" type of oedema. Both papers will repay careful study.

By Epstein especially the disease was considered to be a general metabolic disturbance and not a renal condition primarily at all. Other observers, however, showed that an apparently indistinguishable condition arose as the result of a previous acute infection, the hydræmic chronic nephritis or would appear insidiously after comparatively mild infections of the naso-pharynx,⁽¹¹⁾ while some cases are definitely syphilitic in origin. Thus Addis,⁽⁵⁾ in his classification, calls this condition the chronic active stage of hæmorrhagic nephritis; Fishberg prefers the title "nephrotic type of chronic glomerulo-nephritis". The distinction is not easy to make. Van Slyke⁽⁶⁾ follows Addis in transferring from the nephrotic to the nephritic group all cases in which there is hæmaturia at any stage—and the test of hæmaturia is Addis's very delicate concentration method. Fishberg says frankly that if there is no history of acute onset, differentiation may be impossible, while he considers that the presence of "very few" red blood cells in the urine after centrifugalization is consistent with a diagnosis of nephrosis. Christian⁽¹²⁾ sees no reason for regarding nephrosis as anything but a form of chronic nephritis. The terms are used very loosely, however, by the majority of American writers. Thus Cowie and Jarvis,⁽¹³⁾ in a long and very complete study of metabolism in a case of "nephrosis" in a child of six years, after using the words "so-called nephrosis", finally describe the condition as one of chronic glomerular nephritis advancing into the nephrosis stage. This child gave a history of recurring febrile attacks, followed by rapidly advancing oedema. His urine contained blood and casts, cylindroids and a large amount of albumin. Moreover, he had throughout a raised instead of a lowered basal metabolic rate.

The course of the two conditions is rather different. Thus Epstein considers nephrosis a condition comparatively amenable to treatment, but in case of failure to clear up terminating by "waterlogging" or some intercurrent infection, especially of the serous membranes. The liability to infections of the serous membranes may be associated with the fact, as reported by Schwartz and Kohn,⁽¹⁴⁾ that bacteriæmia is of quite frequent occurrence. They report nine cases which are generally labelled "nephrosis", and take a much graver view of the condition than does Holt

or Clausen. Van Slyke, on the other hand, considers that some cases pass on into uræmia; Fishberg states that this is definite evidence that the condition is one of chronic glomerulo-nephritis—not a pure nephrosis. Similarly Holt considers that in childhood the condition is a relatively mild one and the prognosis good.

The chronic glomerulo-nephritic type very rarely recovers completely. When recovery is apparently complete, there is possibly a slight persistent albuminuria without evidence of renal inefficiency. Fishberg considers that such recovery is possible during the first year, even in the severest cases.

Again, the condition may settle into the "latent" type of Addis, and the patient may live for years, eventually dying of uræmia; or it may pass rapidly into the terminal (Addis), the hypertensive (Fishberg) or the azotemic (Widal¹⁰) stage and lead to death by uræmia.

A very excellent and judicious discussion of the whole difficult question will be found in articles by Gainsborough¹¹ and Izod Bennett, Dodds and Robertson.¹² The pathological anatomy is discussed by McNee¹³ and Van Slyke.¹⁴ It is significant that two of McNee's three examples followed acute nephritis.

Apart from the controversy as to pathology and ætiology, a most important contribution to the subject has been Epstein's revolutionary views on treatment by high protein feeding. Whether this success is due, as he claims, to the restoration of the protein balance of the blood or, as McLean¹⁵ suggests, to the rise in the blood urea content acting as a diuretic, there can be no doubt of the immense benefit derived in many cases from this procedure.

For ordinary clinical work, as in the cases here described, the essential features are: (i) œdema; (ii) albuminuria—often massive, with a high albumin-globulin ratio; (iii) low blood pressure; (iv) normal nitrogenous excretion, as shown by the powers of urea concentration and the blood urea content; (v) the absence or presence of casts or blood in the urine; (vi) the Wassermann reaction. It is desirable to know: (a) the blood cholesterol content, (b) the basal metabolic rate, (c) the blood protein content.

Case I.

Betty V., aged six years, was seen on June 21, 1929, in consultation with Dr. J. L. Dart. She had always been a delicate child, and six months previously had been treated for "mucous disease". This had improved, but in March, 1929, she was seen to be "puffy under the eyes", and very heavy and languid. The urine contained a large amount of albumin, but no casts. There was no loss of the powers of urea concentration. She had been treated therefore with a high protein diet, thyroid extract up to 0.8 gramme (12 grains) daily, and parathyroid extract, but she had made little improvement, and, in spite of "Novasurol" injections and ammonium chloride by mouth, was retreating when seen in consultation.

The child seemed bright and happy. There was œdema from the costal margin downwards; above the costal margin there was little except of the face. Œdema of the legs was severe enough to justify drainage by incisions. The tonsils were septic. The heart was not enlarged. The systolic blood pressure was 110 and the diastolic 90 millimetres of mercury (normal about 95 and 65). There was no abnormality in the heart sounds. There was no pleural effusion. The liver was enlarged and the spleen was palpable. Ascites was easily detected. The urine was acid in reaction, had a specific gravity of 1.030, and was almost solid with albumin. There were no casts or blood, and no lead. The amount of urine passed daily was sometimes as small as 120 cubic centimetres. The urea content was greater than 2.5%. The blood urea content was 25 milligrammes per 100 cubic centimetres. There was no reaction to the Wassermann test.

In spite of this and the good family history, the condition so suggested a syphilitic nephrosis, the œdema, the small amount of concentrated urine, the enlarged spleen and liver, and the quantity of albumin all pointing to this as a possibility, that vigorous anti-syphilitic treatment was instituted. Mercurial inunction was employed, mercury and potassium iodide were given by mouth, and "Khar-Sulphan" was administered subcutaneously.

In fourteen days, that is, by July 10, 1929, the improvement was remarkable. The child was eating and sleeping well and the quantity of urine had increased to 900 cubic centimetres daily. The amount of urinary albumin had fallen from "solid" to 0.5% by Esbach's test. The ascites and œdema of the legs were subsiding. There was still slight œdema of the face. The liver and spleen were no longer palpable.

From then on she improved steadily; she was able to get up and walk about before the end of July, although her feet were still swollen and required drainage incisions on July 24. Another set-back was an acute *otitis media* requiring incision. Very septic tonsils were removed on August 22. By the end of August she seemed a normal child, and was discharged on September 9. She cleared up steadily, and I am since informed that she is still a perfectly normal child.

Comment.

The problem here is, of course, whether the condition was syphilitic or associated with the septic tonsils. Against the former is the failure of the blood to react to the Wassermann test, the healthy family history, and the lack of other stigmata of syphilis.

In favour of syphilis are: (i) The fact that syphilitic nephrosis does occur; (ii) the enlarged spleen and liver; (iii) the improvement with specific treatment, though this may be a dangerous diagnostic fallacy.

The clinical features of this case very closely resembled those described of the nephritis of tertiary syphilis by Jeanselme, Ambard and Laederich.¹⁶

Case II.

Ruth D., aged three years and nine months, was seen in consultation with Dr. J. L. Dart, on December 12, 1929. There were two healthy younger children in the family. Her infancy had been normal, and there had been no sign of any trouble until œdema of the face had been noticed a few days previously. She was not a nail-biter. Her temperature was normal.

She was a sturdy child; the appearance of her face suggested the existence of adenoids. There was slight œdema of the face; the colour was normal. Her weight was 19.3 kilograms (forty-three pounds), and her height was 103 centimetres (three feet five inches). Her teeth were very good; her tongue was clean; her tonsils were much enlarged. There was enlargement of the cervical glands. No abnormality was detected in the examination of the chest and abdomen. The systolic blood pressure was 85 and the diastolic 50 millimetres of mercury. The heat of the day perhaps accounted for the high specific gravity of the urine, 1.040. The reaction of the urine was acid; no sugar was present, but there were dense masses of albumin. It contained no casts and no blood; the urea content was greater than 2.5%. The fundi were normal. There was slight œdema of the legs and feet.

The blood cholesterol content was 295 milligrammes per 100 cubic centimetres. The quantity of urine passed at one time varied from 20 to 70 cubic centimetres; when the fluid intake was 600 cubic centimetres the amount passed during the night was 80 cubic centimetres. The specific gravity varied between 1.010 and 1.025. The ratio of albumin to globulin was six to one.

The tonsils and adenoids were removed on December 13, 1929; both were very greatly enlarged and infected.

She was given a high protein dietary and urea and thyroid extract, 0.12 gramme (two grains) daily. She improved steadily, and by the middle of February she had no signs or symptoms, except a heavy cloud of albumin in the urine (almost 0.5% by Esbach's test). This disappeared and the child now seems perfectly normal.

Comment.

This would appear to be a case of nephrosis with an initial throat infection, with complete cure. It might also be regarded as a case of chronic glomerulo-nephritis of the nephrosis type, with a very mild initial acute stage, though, in view of the care given to the child, this is doubtful.

Case III.

Peter H. was first seen on July 27, 1926, when he was thirteen years of age. There were seven other children in the family, all of whom were healthy. He had always been well until five months previously, when it was noticed that he was growing more and more languid and disinclined to run about. A little later the feet had commenced to swell, then his thighs, and finally his whole body, including his face. The urine had been found to contain much albumin. He had been treated for a time with rest in bed and a restricted diet, with no improvement.

When seen by me he had pronounced oedema of the face, feet, abdomen and thighs especially. His appetite was good, though he disliked milk and sweets. His bowels acted regularly by the aid of purgatives. He was passing 600 to 1,000 cubic centimetres (twenty to thirty fluid ounces) of urine daily, and suffered from nycturia. He had never been a nail-biter or finger-sucker. His teeth were good; his tongue appeared normal. The tonsils were not enlarged, but were soft and "infected" in appearance. There was no enlargement of the cervical glands. The heart sounds were normal and there was no cardiac enlargement. The systolic blood pressure was 100 and the diastolic 80 millimetres of mercury. There were moist sounds at the bases of both lungs. There was a large amount of free fluid in the abdomen; no organs or masses were palpable. The urine was acid in reaction, had a specific gravity of 1.030, and contained six parts per mille of albumin by Esbach's test. It was loaded with cellular and granular casts and many fatty casts. The urea content was 2.6%.

A high protein and low salt dietary was given, and urea in a dose of eight to fifteen grammes (two to four drachms) was given three times a day. The patient improved for a time, and by the end of August his urinary output had risen to 1,500 to 3,000 cubic centimetres daily, the quantity of urinary albumin had fallen to two parts per mille, and there were no more casts. The specific gravity was 1.030 and the urea content only 1.5% (possibly owing to free diuresis). The oedema had much diminished and he was now sleeping comfortably.

By November the improvement was greater and he looked very well; the oedema had disappeared and he was going about. He was passing a normal amount of urine and was not troubled with nycturia. The specific gravity was 1.015, the quantity of albumin was too small to estimate, and the urea content was 2.5%. The systolic blood pressure was 100 and the diastolic 70 millimetres of mercury. The blood did not react to the Wassermann test. The basal metabolic rate was estimated by Dr. Duhig as 5% below the normal. The blood cholesterol content was 200 milligrammes per 100 cubic centimetres.

In December, 1926, the tonsils and adenoids were removed by Dr. Graham Brown. There still was albuminuria, though the patient was very well and living a normal life. Salt was restricted and proteins were kept high in the diet until December 12, 1927, when he developed a cold which, except to cause an increase in the urinary albumin to four parts per mille, seemed to cause no harm. A month later he was very well indeed, but a few days later his face swelled again, he became very tired and languid, his urine decreased in quantity to 500 cubic centimetres daily, and the urinary albumin content rose to six parts per mille. The systolic blood pressure rose to 130 and the diastolic 90 millimetres of mercury. The urine again contained many granular casts.

The patient was put back to bed and was given urea and a high protein and restricted carbohydrate and salt diet. He improved; the blood pressure fell to 105 millimetres of mercury systolic, and 70 diastolic; the quantity of urine increased and the quantity of albumin decreased. By the end of March, 1928, however, he had gone back, the oedema had increased, especially in the body and limbs, though he felt very well in himself. The specific gravity of the urine was 1.028, and the quantity of albumin was four parts per mille.

Digitalis and diuretics were given, as he could no longer tolerate urea. After a fortnight the oedema had increased, and 1.8 grammes (30 grains) of urea were given three

times a day. This produced a great temporary improvement, but he again became intolerant of urea, and the amount of urine fell to 600 cubic centimetres in the twenty-four hours. He improved for a few days with diuretin and caffeine, but on April 29, 1928, he developed a severe pleurisy, which spread and involved the greater part of the right pleura. This lasted for a week; he then improved greatly; his temperature subsided and he seemed better; but signs of fluid appeared at the right base of the right lung, and on May 7, 1928, a few ounces of clear fluid were drawn off. There were oedema of the back and limbs, and ascites. The systolic blood pressure was 120 and the diastolic 80 millimetres of mercury. The fundi appeared to be normal. The specific gravity of the urine was 1.020. By May 12, 1928, his diuresis had increased, his ascites had disappeared, and the urinary albumin had diminished in quantity.

For the next few months his condition varied. He kept rigidly to his salt-free, high protein diet, taking varying amounts of urea and, at times, caffeine and diuretin, when he could not tolerate the urea. He recorded his daily urine output and the amount of albumin in the urine. Any fall in the output and any rise in albuminuria were at once accompanied by a return of oedema; a satisfactory output was 1,200 to 1,500 cubic centimetres. His systolic blood pressure was always about 120 and the diastolic 80 millimetres of mercury. The specific gravity of the urine varied from 1.015 to 1.030. The boy was alert and active.

From September, 1928, he steadily improved, and by January, 1929, when he was eighteen years of age, after a holiday at the seaside, his weight was 65.25 kilograms (145 pounds), height 173 centimetres (five feet nine inches). There was no abnormality revealed at examination of his teeth, throat, heart, lungs and abdomen. The systolic blood pressure was 120 and the diastolic 60 millimetres of mercury. The specific gravity of the urine was 1.022. There was still much albumin, but no casts; the urea content was 2.5%. He had been at school and seemed thoroughly well. Since then he has started regular office work and has no signs or symptoms of any kind.

Comment.

This case is put forward as one of chronic glomerulonephritis of the nephritic type, arising insidiously, possibly by tonsillar infection, and finally clearing up after at least one relapse and an acute serous inflammation.

Such a case is not very common; the more usual one is either death from the serous infection or a steady progress towards uræmia.

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Reviews.

LIGHT THERAPY.

IN recent years there has been a veritable flood of new publications concerning ultra-violet therapy, many of them of a very indifferent quality. "Ultra-Violet Therapy", by Austin Furniss is assuredly not included in this category.¹ The author claims, with every justification, that the book is a comprehensive and authoritative review of light therapy. It consists of a series of delightfully clear and lucid chapters, each one of which deals with one aspect of the question. Out of the chaotic mass of accumulated data on this form of therapy the author has made a judicious selection of all that is of proven value, and there is nothing in his pages which can shock the susceptibilities of even the tenderest medical orthodox. The attitude of mind evinced is that of the sober and restrained enthusiast compiling and clarifying knowledge and requiring that each action and reaction shall be explained in terms of known physiology and pathology. Dr. Furniss keeps both feet firmly on the ground throughout and has achieved a sane compilation which should be read widely.

In view of the general application of light therapy to the daily problems of practice, and particularly to those of public health, no medical practitioner can afford to be ignorant on this subject.

Einstein has classified scientific investigators into three grades, in order of merit: those who discover new truths, those who invent new applications for old principles, and those who organize and classify knowledge. This work is a distinct contribution in the third class. As regards light therapy, we would suggest the addition of a bibliography to the next edition, for the book whets the reader's appetite for the more detailed studies not possible in a general work of this size. The volume is attractively produced and printed, and can undoubtedly be recommended as one of the best small works on light therapy, if not the best at present available.

DENTAL SURGERY.

A THIRD edition of Parfitt's "Operative Dental Surgery" has appeared. The author is to be congratulated on the production of an excellent text book.²

The field of operative dental surgery is a wide one, and within it is included all operations, such as filling,

treatment of the pulp, crowning, and so forth, done on the teeth to repair the damage of disease or injury. The author has also included in the book a chapter on the extraction of teeth.

The book contains the substance of Mr. Parfitt's lectures to the dental students of Guy's Hospital. The author has contrived to pack into a small space a great deal of valuable information. The reader is struck by the conciseness of the work and by the inclusion of the results of recent researches. The authorities quoted are listed at the end of each chapter and quotations are made mainly from articles published in scientific journals. The sections calling for most comment are those which deal with sterilization and asepsis, local anaesthesia, and with the pulpless tooth and focal infection. The chapter on infection and cleanliness is excellent. It is extremely difficult to carry out a dental operation under aseptic conditions. In the removal of a tooth or the administration of a local anaesthetic asepsis can be maintained, but in the filling of teeth, where many small and complicated pieces of mechanism have to be handled, the risk of carrying infection from one patient to another is considerable. The author sets out a rational technique for sterilizing instruments, dressings *et cetera*, and counsels the student to cultivate the aseptic sense. This chapter is really valuable and could be read with profit by all dentists.

Local anaesthesia is a boon both to the dentist and his patient, and in these days, when the local anaesthetic solution and the method of injection have been so perfected, there is no reason why it should be withheld. The importance of local anaesthesia is rightly stressed.

On the subject of the pulpless tooth and focal infection the author surveys the mass of work done in recent years and comes to the conclusion that there is no such thing as a double standard—a medical and a dental standard—and where the health of the patient is concerned the benefit of the doubt should not be given to the pulpless tooth; its removal should be advised if the teeth are to be excluded as a possible source of infection.

The impression is gained that the author, in his lectures to his students, stressed the importance of sound clinical methods and careful technique.

The book is well printed and is well illustrated by blocks made from photographs. It can be recommended as a thoroughly sound text book.

Notes on Books, Current Journals and New Appliances.

EGYPT AND MAGIC.

DR. T. GERALD GARRY has written a readable little book entitled "Egypt: The Home of the Occult Sciences".¹ He makes special reference to Imhotep, "the mysterious wise man and Egyptian God of Medicine". Imhotep has been represented, as the author states, as a "sage, scribe, architect, magician, physician and astrologer"; he was also Vizier to King Zoser and chief lector priest. Two thousand five hundred years after his death he was declared to be a deity. The author investigates Imhotep's claims to be associated in any way with the history of medicine. He states that apart from the historical claims, which are at least dubious, it is incongruous to entertain any serious suggestion that the semi-mythical Egyptian Deity of Medicine should be associated with modern medical practice. The author's discussion on Egyptian magic and on the ceremonies connected with mummification, spirits, hypnotism and so on, is interesting, apart altogether from its bearing on Imhotep.

¹ "Ultra-Violet Therapy: A Compilation of Papers Forming a Review of the Subject", by Austin Furniss, L.R.C.P., L.R.C.S., L.D.S., D.P.H.; 1931. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 377, with illustrations. Price: 12s. 6d. net.

² "Operative Dental Surgery", by J. B. Parfitt, L.R.C.P., M.R.C.S., L.D.S.; Third Edition; 1931. London: Edward Arnold. Demy 8vo., pp. 412, with illustrations. Price: 21s. net.

¹ "Egypt: The Home of the Occult Sciences, with Special Reference to Imhotep, the Mysterious Wise Man and Egyptian God of Medicine", by T. G. Garry, M.D., M.Ch., M.A.O., M.B.E.; 1931. London: John Bale, Sons and Danielsson Limited. Crown 8vo., pp. 98. Price: 7s. 6d. net.

The Medical Journal of Australia

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THE HOSPITAL PROBLEM.

IN November of last year reference was made in these columns to the hospital problem in Australia—to the needs of the members of the community on the one hand, and on the other to the relationship of the members of the medical profession to hospitals. The subject was brought into prominence at the time by the decision of the New South Wales Branch of the British Medical Association to support the Metropolitan Hospitals Contribution Fund, provided that certain conditions were observed, and by the formulation of a scheme by the Victorian Branch for the provision of hospital facilities and medical service on a contributory basis. The initiation of extensive services of this kind of necessity takes some considerable time, and neither the New South Wales nor the Victorian scheme has yet been carried into effect. The hospital problem, or at least certain aspects of it, has been brought to the notice of medical practitioners by the publication in *The British Medical Journal* of March 5, 1932, of a report by a joint committee of the British Hospitals Association and the British Medical Association on the payment of visiting medical staffs of voluntary hospitals. This report has a bearing on the hospital problem in Australia, and

members of the Australian Branches will be well advised to read it carefully.

Before further reference is made to the English report, it is necessary to emphasize once more the exclusion from schemes in which payment of medical practitioners is discussed, of persons who are not able to pay for medical attendance. Non-medical persons need to be reminded of the privilege claimed by medical practitioners of treating the sick poor without fee or reward; they need to be reminded that medical practitioners are followers of a profession and do not drive a trade; they also need to be reminded that those who, by subterfuge or misrepresentation, appropriate what is intended for destitute persons, are guilty of theft.

The first point in connexion with the English report is that it is the work of a committee which consists partly of non-medical persons under a non-medical chairman, Lord Linlithgow. The problem stated by the committee is how "to devise means whereby all voluntary hospital patients who can afford to do so, may make a reasonable contribution towards practitioners' fees as well as meeting the cost of their maintenance while in hospital". In other words, the problem is concerned with the financing of the hospitals as a whole. The committee recommends the adoption of contributory schemes with a twofold object. The order of these objects must be noted. First comes the cost of maintenance, and, maintenance being paid for, the second object is the making of a contribution towards the remuneration of the visiting medical staffs. The natural corollary of these recommendations is "the provision in all suitable hospitals of a sufficient number of rooms or wards for paying patients, coupled with the strict application of a maximum means test for entry into general wards". The last recommendation for the constitution of a standing joint committee of the British Hospitals Association and the British Medical Association, to give advice and guidance when necessary, reflects the wisdom of the committee.

In studying this report, Australian practitioners will seek its application to Australian conditions. The problem in Australia is much the same as in England; in certain respects it may be more urgent. It would be idle to hold that the report as it stands

is applicable to Australian conditions. If the drawing up of such a document in Australia were contemplated, the body to set it going would be the Federal Committee of the British Medical Association in Australia. Unfortunately, the Federal Committee cannot initiate anything of the kind; matters have to be brought to its notice by one of the Branches or by a similar body. It cannot impose its will on the Branches. Its decisions are sent to the Branches again and again, and as it meets only twice a year, the machinery is cumbersome in the extreme. Anyone who is interested and who cares to consult the reports in this journal, will find that for several years most of the time of the Federal Committee, apart from that given to the forming of the proposed Federal Council, has been spent on matters of no great magnitude. There has been no attempt to guide the medical profession in the difficult matter of hospital administration and practice. When the apparently endless sending of documents to England for approval by the Council of the Parent Body, and when the legal consultations over phraseology and similar minutiae have been concluded, the Federal Council will come into being. Medical practitioners may hope that then, at length, medical legislation for the whole of Australia will be initiated and carried into effect by a central responsible body; the Federal Council will have the necessary powers. In the meantime the hospital problem is being faced by each Branch in each State. Admittedly each State has problems peculiar to itself. But it is more than time that a standard should be set up for the whole of Australia. This standard might not be attained at once in every State, but it should embody answers to the many sides of the problem and should be so framed that freedom of action to meet local conditions would be possible. It must be so framed that the non-medical public will realize that the medical profession is concerned with the public health, with the successful financing of hospitals and with justice to its own members. But the public health must be kept in the forefront. Although schemes are on foot in several States and hopes are running high for the successful working of the schemes, it is not too late for the Federal Committee to appoint a subcommittee to draft a report which might be set up as

a standard. This subcommittee need not necessarily be appointed wholly from its members; its personnel should preferably be chosen from amongst those who have studied the problem. Such a subcommittee might eventually become a permanent entity. But nothing will be done by the Federal Committee unless it is asked to move in the matter.

Current Comment.

THE VENTILATION EQUIVALENT FOR OXYGEN.

THERE is need for some means of testing the body's powers of obtaining oxygen from the inspired air. These powers depend almost solely on the efficiency of the respiratory and circulatory systems, and they vary, of course, under conditions that cause a greater or less strain to be thrown on these systems. H. W. Knipping and Alan Moncrieff, of the University Medical Clinic, Eppendorf Hospital, Hamburg, discuss the matter in a recent important paper.¹ They point out that estimations of the vital capacity and of the volume of air respired per minute do not provide the information required. The volume of air respired per minute depends on several factors, such as the state of tissue metabolism; estimation of the vital capacity cannot be implicitly relied on, for a certain reduction in the vital capacity is compatible with efficient pulmonary ventilation. The "ventilation equivalent for oxygen", first employed by Anthony, is not open to these objections. It may be defined as the quantity of air (in litres) that must be inspired to enable the body to obtain 100 cubic centimetres of oxygen. It may be expressed thus:

$$\text{Ventilation equivalent for oxygen} = \frac{\text{Minute volume of respiration (in litres)} \times 100}{\text{Oxygen used per minute (in cubic centimetres)}}$$

Knipping and Moncrieff believe that a study of the ventilation equivalent for oxygen may throw some light on the problems of dyspnoea and may be the means of obtaining valuable information concerning respiratory efficiency in connexion with the development of thoracic surgery.

The minute volume of respiration and the amount of oxygen used per minute are estimated by means of the "Knipping Metabolism Apparatus", which consists of a gasometer, a small pump, a flask containing caustic potash solution, a three-way stop-cock attached to a special rubber mouth-piece, and rubber tubing joining these four parts so as to form a closed circuit. A known quantity of air is placed in the gasometer; the patient inspires from and expires into the apparatus. The gas in the apparatus is kept in constant motion by the pump. The expired carbon dioxide is taken up by the caustic potash solution; the difference in the volume of gas

¹ *The Quarterly Journal of Medicine*, January, 1932.

in the apparatus (as measured by the gasometer) represents the volume of oxygen consumed.

As a result of the examination of 54 normal adults, Knipping and Moncrieff conclude that the average value of the ventilation equivalent for oxygen is 2.37 litres, and that the normal limits are 1.68 and 2.89 litres—a variation of $\pm 25\%$. The age and sex of adults did not appear to have any influence. The value is not affected by the taking of food or by moderate exercise. It is raised by emotion, lowered in sleep, and raised if the carbon dioxide content of the air is abnormally increased or the oxygen content abnormally diminished.

Conditions tending to depress the respiratory centre cause a lowering of the ventilation equivalent for oxygen; excitation of the respiratory centre causes a rise in the equivalent. For example, diabetic coma is responsible for a very great rise; in one instance Knipping and Moncrieff observed it to reach 11.4 litres. An interesting feature is that the ventilation equivalent for oxygen is raised during the pre-comatose stage and remains high for some time after clinical evidence of ketosis has disappeared. The investigators regard this as evidence of the value of the test in the estimation of the degree of ketosis.

As might be expected, the ventilation equivalent for oxygen of persons suffering from cardiac failure was found to be raised in proportion with the degree of failure. Exercise by a normal person results in an increase in the quantity of air inspired and a proportionate increase in the quantity of oxygen consumed. The effect of exercise on a person suffering from cardiac failure is to increase the volume of the inspired air out of proportion with the volume of oxygen consumed; this, of course, results in a higher ventilation equivalent for oxygen.

Disease of the respiratory system causes a rise in the ventilation equivalent for oxygen. Various factors are concerned, chiefly the type and extent of the disease, the degree of toxicity, and the mechanical effects of the disease on the respiratory movements. Knipping and Moncrieff remark that there is scope for investigation of the effects of artificial pneumothorax on the ventilation equivalent. Their investigations, as far as they have gone, tend to show that there is a pronounced fall in the equivalent immediately after the operation, but that this tends to rise during the succeeding few days. This appears to indicate that the ventilation of the lungs is actually more efficient when the greater portion of the diseased lung is thrown out of action. It would be of interest to note the effect of refills. Undoubtedly the alteration in the ventilation as a result of the diseased lung's collapse is not due merely to mechanical influences; toxic absorption, circulatory changes and other factors play important parts.

These studies should be carried further. A great deal remains to be learned about the causation of dyspnoea and the pathological conditions associated with it. Possibly an investigation of the ventilation equivalent for oxygen may assist in the elucidation

of the problems. It scarcely seems likely that Knipping and Moncrieff's method will come into general use in medical practice, though it may prove to be of considerable clinical value. It is in the field of physiological and pathological research that greatest use may be made of the method. A careful correlation of clinical, biochemical and electrocardiographical findings with the ventilation equivalent for oxygen, in a large series of cases, should be made. The investigation should not present very great difficulties.

THE POTENCY OF LIVER EXTRACT.

DURING the past few years great numbers of brands of liver extract have appeared. A statement concerning the equivalent in fresh liver represented by such and such a quantity of his particular product is issued by each manufacturer. There is no standardization, nor apparently is there any guarantee that no great deterioration in the active principle has occurred during the preparation of the substance. The truth of the manufacturer's claims can only be tested by an examination of the results of treatment—obviously not an ideal method when the progress of such a serious disease as pernicious anaemia is used as an indicator. A method of testing the potency of liver extract has recently been devised by J. P. McGowan.¹ He points out that upwards of 3% of fowls suffer from pernicious anaemia, probably due to infestation with a tapeworm, *Davainea proglottina*, whose intermediate host is the garden snail. His investigations revealed that the oral administration of liver extract to fowls had little effect, but that intraperitoneal injections of liver extract in a sufficiently high dosage caused a definite increase in the production of reticulocytes. The dosage required is used as a measure of potency of the liver extract used. McGowan points out that, despite treatment, pernicious anaemia of fowls seems always to end fatally. This is only to be expected if the supposed source of poisoning (*Davainea proglottina*) is not removed. He suggests that a far larger proportion of fowls suffering from pernicious anaemia may be made available for experimental purposes if they are kept in a suitable yard with infested snails.

McGowan has not discovered any means of estimating the potency of liver extract in units, but he has pointed the way to a possible method of obtaining standardization and eventually perhaps accurate measurement. The way, however, will not be easy to travel. Such variables as the severity and duration of the anaemia, the grossness of the cestodal infestation, and individual resistance, will require consideration. The effect of anthelmintic treatment on the anaemia should prove interesting; if the anaemia persists despite the destruction of the worms, one variable factor is eliminated and the path to discovery rendered to that extent less difficult. Doubtless some practical method will eventually be devised. There is certainly need for one.

¹ Archives of Internal Medicine, January, 1932.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Hæmolytic *Staphylococcus Aureus*.

JULIA T. PARKER WELD AND ANNE GUNTHER (*Journal of Experimental Medicine*, September 1, 1931) have reported some experiments which seem to establish the fact that there are at least two and probably more antigenically distinct exotoxins in toxic filtrates of the hæmolytic *Staphylococcus aureus*. They have divided their experiments into two groups: first, those dealing with the relative proportions of hæmotoxin, necrotoxin, leucocidin and the "acute killing" poison in filtrates of hæmolytic *Staphylococcus aureus* cultures, and secondly, those dealing with the selective adsorption of toxins from the filtrate by erythrocyte stroma or by leucocytes. Full details of the experimental methods used are given. It was found that in general filtrates that were strong in one toxic activity were strong also in the others and in the strongly hæmolytic filtrates containing 100 to 200 hæmotoxic units per cubic centimetre there appeared to be a fairly definite ratio between the hæmotoxic, necrotoxic and "acute killing" activities. In filtrates of less hæmolytic strength this relationship did not hold. No definite relationship was found between the leucocidins in a filtrate and any other toxic properties. By binding the hæmotoxin with erythrocyte stroma they were successful in obtaining almost complete adsorption of the hæmotoxin with either rabbit or sheep red blood cell stroma, leaving the necrotoxin undiminished in the filtrate. When the stroma-adsorbed filtrates were tested for the presence of leucocidin it was found that most of this toxin had also been removed from the treated filtrates. Two rabbits were injected intravenously with stroma-adsorbed toxins and survived, but two injected with untreated filtrate died. The next experiments were carried out to discover whether leucocytes selectively adsorb one or more of the toxins from a toxic filtrate. It was found that leucocidin was invariably almost completely removed by the leucocytes, whereas the necrotoxin remained undiminished in the leucocyte-treated filtrates. It was found that the leucocytes sometimes did and sometimes did not remove the hæmotoxin from filtrates.

The Influence of Pus and Blood on the Action of Bacteriophage.

MARTHA APPLEBAUM AND WARD J. MACNEAL (*Journal of Infectious Diseases*, September, 1931) have presented observations concerning the influence of pus, blood, blood corpuscles and blood serum on the activity of bacteriophage *in vitro* and have discussed the possible relation-

ship of such observations to an understanding of the behaviour of bacteriophage in the body. These workers found there was a definite inhibitory influence of pus on the antistaphylococcus bacteriophage. Even when diluted to one in one-thousand, a purulent exudate sometimes exerted a relative inhibitory effect *in vitro*. Heating the pus at 60° C. for thirty minutes only slightly diminished this inhibitory effect. This effect explains the persistent survival of the bacteria in purulent collections within the body of a patient receiving bacteriophage treatment subcutaneously or intravenously. In the experiments with the colon bacillus and its specific bacteriophage the results were not the same in the presence of pus, and similar dilutions of purulent exudate did not seem to have an analogous inhibitory influence on the lytic action of the bacteriophage. Undiluted citrated blood, undiluted defibrinated blood, and diluted blood serum were found to exercise an inhibitory influence on the antistaphylococcus bacteriophage, but there was considerable variation in behaviour of different bacterial strains and in the behaviour of different races of bacteriophage. Undiluted blood did not permit the multiplication of the colon bacillus under the experimental conditions employed, and the experiments with diluted serum failed to reveal a clearly evident inhibition of the colon bacillus bacteriophage.

The Specific Characteristics of Syphilitic Blood Proteins.

S. T. WALTON (*Journal of Experimental Medicine*, December, 1931) describes a series of experiments to determine the difference between the composition of the blood of persons suffering from a syphilitic infection and of normal human blood. The experiments show that in two characteristics, surface activity and solubility in alkaline buffer solutions, syphilitic serum behaves quite unlike normal human serum. In its surface activity its behaviour was found to be very similar to that of sheep blood cell antibody and probably to be typical of immune serum in general. In the case of normal serum the findings indicate that the molecules of a raw or unheated specimen (if a sample of a one in 10,000 dilution be left undisturbed for one hour) become arranged in the surface layer in such a manner that the tension of that layer is much reduced from that of the freshly mixed specimen. In the heated specimen, however, it appeared that some of the molecules, supposedly the larger globulin molecules, became decomposed and broke down into smaller particles, increasing the surface area and producing a solution which had to be diluted about 50,000 times to bring about proper conditions in the surface layer to produce a maximum decrease of surface tension. Heating was found not to affect immune serum in the same manner. The maximum reduction of surface tension occurred at the same dilution

or at a lower dilution than with the unheated serum. Separated globulin from syphilitic serum was found to be from 20% to 40% less soluble in buffer solutions of optimum hydrogen ion concentration than that from normal serum in a given time, indicating that the former is composed of larger aggregates, which are more difficult of ionization and may be of different structure. Serum albumin was found to be much more readily soluble in alkaline buffer solutions than globulin. Further investigations are to be made by these workers.

The Diphtheroid Phase of Streptococci.

LLOYD B. JENSEN AND HERSCHEL B. MORTON (*Journal of Infectious Diseases*, November, 1931) have isolated from the urine of a patient suffering from cystitis a micro-organism which repeatedly grew as a diphtheroid on 5% horse blood agar, but which on a liquid medium (Rose-now's dextrose brain broth) grew as a streptococcus in short and in long chains. The same phenomenon was also observed with another strain of bacteria recovered from the blood in a case of subacute bacterial endocarditis. Studies were undertaken to determine whether or not changes other than in morphology had taken place. The authors showed that in the diphtheroid phase the bacteria were avirulent when tested by intravenous injection into rabbits, but in the streptococcal phase they were virulent and had elective localizing properties. On blood agar, cultures of organisms from the kidneys of rabbits in which elective localization had been demonstrated, revealed only the diphtheroid forms, whereas in dextrose brain broth the cultures yielded only streptococci, as revealed by examination of stained smears. Tests for agglutination and the absorption of agglutinins disclosed that the diphtheroid and streptococcal phases were antigenically distinct. Tests for the production of peroxide indicated that in the diphtheroid phases the strain was a feeble producer of peroxide and that on repeated subculture on blood agar it lost this property. Studies on the strain of bacteria isolated from a patient with bacterial endocarditis revealed similar phenomena.

Action of Methylene Blue on Body Temperature and Metabolism.

P. E. GREGOIRE (*Journal of Experimental Medicine*, December, 1931) records the results of experiments showing that methylene blue injected intravenously in sufficient doses in the white rat may cause either a rise or fall of body temperature and may or may not bring about a transitory increase in the total metabolism, depending chiefly on the temperature of the environment. It was found to cause an increase in metabolism at 28° C. or above, but at lower temperatures it did not affect metabolism. The author concludes that this effect of

methylene blue is not the result of direct catalytic action of the dye upon cellular oxidation, but is due to indirect disturbance of thermoregulation and doubtless of other functions of the organism. In animals exposed to an atmosphere with a high partial pressure of oxygen, methylene blue causes pulmonary oedema much more rapidly than does oxygen alone.

HYGIENE.

The Carcinogenic Potency of Mineral Oils.

C. C. AND J. M. TWORT (*Journal of Industrial Hygiene*, August, 1931) describe the results of applying certain mineral oils to the backs of 100 mice for a considerable period of time in an endeavour to estimate the cancer-producing ability of the agents. Carcinogenic potency varies with concentration of the agent, amount applied, nature of the diluent issued, area covered by applications, number and frequency of applications, susceptibility and health of the animal, greasiness of the skin, hygienic and dietetic conditions, and, possibly, the season of the year. The potency of various oils is estimated by a mathematical process depending on the time in weeks taken to produce a certain number of tumours in animals; in other words, the response of the animals to the carcinogenic agents expressed as a function of time. Refined Scottish shale lubricating oil was found in every instance to be more potent than any refined petroleum well oil, and the most potent fraction was found to be the unfinished lubricating oil. The samples of refined petroleum tested were found to vary considerably in potency, and as a rule the heavier grades were found to be more potent than the lighter. The addition of lanolin or sperm oil lessened the carcinogenic potency. The fluorescence of oils may be related to their potency. "Chrysene" has a definite carcinogenic potency.

Cancer and Tumour Immunity.

THOMAS LUMSDEN (*Journal of State Medicine*, October, 1931), representing the British Empire Cancer Campaign, in setting out the problems of cancer treatment and research discusses, first, surgery and radiation in the treatment of various types of case. Radiation is elected in all surgically inoperable cases, all cases of cancer of the *cervix uteri*, and rodent ulcers. It may be preferable to surgery in carcinoma of the breast, face and tongue and in certain hemangiomas and endotheliomas, although results in such cases cannot be said to have surpassed those obtained by surgery. All other operable cases should be treated by surgery. Unfortunately there remain other cases in which either treatment is unsatisfactory. Research directed towards the cure or prevention of cancer may be pursued: (i) by seeking

the cause; (ii) by seeking drugs, radiations or sera lethal to cancer cells; but relatively harmless to normal cells; (iii) by altering the patient's fluids or tissues so that cancer is unable to survive, that is, by producing tumour immunity. Considerable knowledge has been gained regarding the causes of cancer, but much remains to be learnt. The existence of specific anti-cancer bodies has been demonstrated, and tumour immunity by auto-vaccination through local inoculation of tumours has been produced in laboratory animals, and it is hoped that success in treatment of human beings will ultimately be achieved in this way. The results are bound up in the euglobulin fraction of anti-cancer sera.

Diet in the Treatment of the Tuberculous.

M. GEORG SCHROEDER (*Journal of State Medicine*, August, 1931) postulates that one of the chief reasons for the reduction of the tuberculosis mortality in civilized countries is improved nutrition and higher living standards of the masses. A mixed diet rich in proteins and fat and including vegetables, salads and fruit, is necessary in the treatment of tuberculosis. The fat content is most necessary. The lipases resulting from the digestion of fats may have a specific action on the tubercle bacillus. Carbohydrates should be restricted only when indicated by other conditions. Proteins and fats should be increased when there is fever. Increased metabolism seems to favour cure of tuberculosis. Special diets are criticized from the point of view of vitamin content and mineral deposition in the tissues.

Rheumatism of Childhood.

JAMES M. BEATTIE (*Journal of State Medicine*, October, 1931), in accepting Osler's definition of acute rheumatism as "an acute infection, characterized by multiple arthritis and a marked tendency to inflammation of the endocardium of the valves of the heart", draws attention to the number of cases of severe rheumatic endocarditis with no history of joint affections. The balance of evidence favours a close causal relationship between some strain of streptococcus and the disease. Uniformity of any specific type of streptococcal infection, however, has not been established. In discussing evidence for and against the streptococcal theory, it is pointed out that arthritis associated with myocarditis, endocarditis and chorea has been produced by inoculating rabbits with streptococci isolated from patients with acute rheumatism. The arthritis has been of characteristic type and subject to typical relapses. Certain authors claim to have produced identical lesions with milk streptococci, but no evidence has been produced to prove dissociation of these from rheumatic strains. A recent outbreak of acute rheumatism in England was traced to a milk supply containing hemolytic streptococci. Endo-

carditis may be produced in animals by streptococci, but also by other bacteria. This discounts the value of this evidence. The production of Aschoff bodies in the myocardium is strong, but not conclusive evidence in favour of rheumatic infection. Experimental lesions of this nature are not pathognomonic, because in normal animals nodules of a similar description are found. A further objection to the specificity of endocarditis is the isolation of a variety of strains of streptococci and the claim of their causal relationship to the condition. It is claimed by some that several strains of streptococci act in association to cause rheumatic lesions. Agglutination reactions show that in rheumatic fever the infective organism is usually of the *viridans* or a type. The author concludes that one of two views can explain the case. First, a bacterium produces a toxin or allergen. The organism may remain at a local site, though at some stage of progress it reaches the blood stream and thence the secondary areas. The toxin is regularly distributed and may produce most of the symptoms. No antitoxin has been demonstrated, however. Secondly, some other bacterial substance, not necessarily a toxin, may be the stimulating agent in susceptible persons.

Butchers' Dermatitis.

BENJAMIN SCHWARTZ (*Journal of Industrial Hygiene*, September, 1931) has investigated the occurrence of a dermatitis affecting butchers working in meat packing establishments, and other persons handling freshly killed carcasses. The lesions of this affection are first seen in the form of reddening and itchy swelling between the webs of the fingers. A day or two later vesicles erupt, producing intense itching. The lesions spread to the sides and backs of the fingers and over the back of the hand to the wrist. The dermatitis may spread to the elbow. The affected skin hardens and forms crusts which peel off, exposing new, tender skin which hardens in turn and cracks. In certain cases lesions have been found on the face and other parts of the body. The affection is not due to a sensitization to ascaris or any other parasite. It is traceable in nearly all cases to constant handling of viscera, frequently of freshly killed swine and cattle. A definite delay occurs before onset, three days appearing to be the shortest period. Individual susceptibility appears to play a part, and certain observers report partial immunity following constant exposure. Others describe a seasonal incidence, the winter months favouring its onset. Emollient ointments bring relief, and mild acids, such as vinegar and lemon juice, relieve the itching. The immediate cause is believed to be the accumulation of blood, serum, peritoneal fat and other tissue, between the fingers. Frequent washing of the hands in cold running water appears to be the most effective prophylactic measure.

British Medical Association News.

ANNUAL MEETING.

THE ANNUAL MEETING OF THE WESTERN AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Hospital for the Insane, Claremont, on March 20, 1932, Dr. H. J. Gray, the President, in the chair.

Financial Statements.

The Honorary Treasurer, Dr. A. Syme Johnson, presented the balance sheet and financial report for the twelve months. These were received and adopted. The financial statement is appended.

President's Address and Annual Report.

In accordance with the custom, the retiring President combined his address with the report of the Council.

Membership of Branch.

The membership of the Branch this year shows a slight decrease, being 244, compared with 253 last year.

It is with much regret I have to record the deaths of Dr. J. K. Couch, who was a member of the Branch for so many years and was President in 1917, Dr. John Kenny, W. J. Hancock, D.Sc., honorary member.

Meetings of Branch.

The general meetings have been well maintained. There were ten meetings, with an average attendance of 46.

The annual general meeting was held at the Claremont Hospital by the kind invitation of Dr. Bentley. A paper entitled "The Influence of Aetiological Factors upon the Prognosis and Treatment of Mental Disorders" was read by Dr. R. G. Williams.

Two clinical evenings were held, one at the Children's Hospital, by the kind invitation of Dr. W. Seed, and the other at the Perth Hospital, by the kind invitation of Dr. H. Stewart. These two meetings were particularly well arranged, and every member had full opportunity of examining the patients before discussion.

The following demonstrations were given at another meeting: (i) The electrocardiograph, by Dr. Troup; (ii) method of estimating basal metabolic rate, by Dr. Breidahl; (iii) artificial pneumothorax, by Dr. Hislop; (iv) clinical method of estimating blood sugar, by Dr. Hunt.

There was a successful joint meeting with the Odontological Society, the subject being "Children's Teeth".

At other meetings the following papers were read: (i) "Ocular Conditions in General Practice", by Dr. Gawler; (ii) "History of the Western Australian Branch of the British Medical Association", written by Dr. Jull; (iii) "Gynopathic Backache", by Dr. Holland.

The meeting during Post-Graduate Week was a thorough success, there being 84 present, when a most interesting address was given by the Honourable Mr. Justice Dwyer, entitled "Some Remarks on Medico-Legal Jurisprudence".

Council.

The work of the Council during the year has been very strenuous (there were also many subcommittee meetings). Thirteen meetings were held, the individual attendances of members being as follows:

Dr. H. J. Gray	13
Dr. D. Smith	5
Dr. H. B. Gill	13
Dr. Aberdeen	12
Dr. Clement	11
Dr. Holland	13
Dr. Atkinson	10
Dr. Syme Johnson (resigned)	5
Dr. F. Gill (appointed)	6
Dr. Le Souef	13

During the year Dr. Syme Johnson, after five years' valuable service as Honorary Treasurer, retired, and the

Council elected Dr. F. L. Gill to fill the position during the remainder of the year.

The following are the main items dealt with.

Library Accommodation.

The Board of Management of the Perth Hospital withdrew their offer of the use of the old X ray rooms. Satisfactory arrangements have now been made for accommodation at Chennell House, St. George's Terrace. The Council have gratefully accepted Dr. White's offer to assist the librarians.

Workers' Compensation Act.

1. *Special Medical Committee.*—During the year Dr. Anderson retired and Dr. Hadley was appointed in his place. The other members are Dr. Juett and Dr. Holland. Much arduous work has been done for very little thanks from medical practitioners or insurance companies. The Council appreciate fully the unbiased decisions of this Committee, and did not dissent from the findings on any occasion when reference was made to the full Council. It is significant that the underwriters no longer recognize the Committee.

2. *Parliamentary.*—During the year a bill to amend the Act was submitted to Parliament and lost, the Upper House refusing to accept the principle of the State Insurance Company having a monopoly of the workers' compensation business. The Bill involved a considerable amount of work by the Council by meetings and interviews with the Government Actuary, the Minister and the Employers' Federation.

3. *Schedule of Fees.*—A schedule of fees was presented to the Minister when the Bill was introduced. Later the Government Actuary asked for the adoption of this schedule in accordance with the general reduction of costs in government departments. This was agreed to at a general meeting on August 26, 1931, with the provisos: (a) That the doctor be paid direct. (b) That there be no "set-off" for premiums unpaid by the employer. (c) That when a case was referred for report to a second medical officer, a copy of his report be sent to the doctor treating the case.

The Government Actuary, the General Accident Fire and Life, and the Automobile, Fire and General Insurance Companies agreed to these terms, but the tariff companies controlled by the Fire and Accident Underwriters' Association ignored them, and wrote cancelling the arrangements with the Special Medical Committee for review of accounts, and have apparently instructed all insurance companies that the second schedule is to be taken as "reasonable fees" under the Act, and many doctors' accounts submitted on the first schedule have been revised according to the second schedule.

In view of the opinion of our legal advisers, that the conclusion of the underwriters would probably be supported at law, the Council recommended to general meeting, which has approved, that members be advised to submit their accounts in accordance with Schedule Number 2.

Post-Graduate Week.

A very successful post-graduate week was held in July, at which Mr. Upjohn and Dr. Cowen, from Melbourne, lectured and demonstrated. The week closed with the annual dinner at the Esplanade Hotel, which was well attended.

A report of this Committee will be submitted to you later.

Rules.

The present rules have been out of print for some time and the opportunity was taken of revising them. A subcommittee met on several occasions, and after review by the Council at three meetings the rules have been submitted to our legal advisers and will be brought forward at an early date for consideration of members at a general meeting.

Model Lodge Agreement.

The Subcommittee consisting of Dr. Clement, the President, the Honorary Secretary, and Dr. M. K. Moss

(coopted) have had several meetings, and also a meeting with the Friendly Societies' Council.

1. *The 10% Unemployment Reduction.*—The 10% reduction of the doctor's cheque in return for the Friendly Societies' Council keeping unemployed married members on the medical list was not acceptable on the goldfields and was not workable in the country districts, but held good in the metropolitan area until March, when general meeting agreed to extend the agreement for another twelve months.

2. *A 20% Reduction in Rates.*—The Friendly Societies' Council requested a 20% reduction in the rates paid. This request was refused by a special general meeting in January, the main reason being that it is considered that the rates of the present agreement are the minimum at which lodge work should be done.

A 20% reduction in rates and also in income limit is considered to be a new principle or an extension of the present agreement.

The financial condition of the friendly societies as a body is unchanged. On the other hand the profession are losing private patients by their becoming lodge patients, by the fall of their incomes bringing them within the income limit and by unfinancial lodge members ceasing to pay for medical benefits and so becoming private or hospital patients without paying for medical services. Another general meeting on March 16, 1932, after hearing the case put up by the representatives of the Friendly Societies' Council, again refused to agree to a reduction.

District Medical Associations.

During the year District Medical Associations were formed in the main centres of the State. Successful inaugural meetings have been held in the Eastern District (Northam as centre), Great Southern District (Katanning as centre), South-West District (Bridgetown as centre), and the goldfields. The Council hope and expect that the District Associations will prosper and make for more definite presentation of the views and wishes of the country practitioners.

University Syllabus for Physiology.

A subcommittee consisting of Dr. Atkinson, Dr. Paton, and the President have gone into this matter with the University authorities, advocating a more reasonable syllabus for the junior and leaving examinations.

Honorary Staffs in Public Hospitals.

1. *Hospital Policy.*—In common with other Branches we are feeling the burden of the enormous amount of public hospital work. A vigilance committee, consisting of the Council, together with Dr. Marshall, Dr. Hislop, Dr. M. B. Johnson, Dr. Day and Dr. Maitland, was appointed by general meeting. Several meetings were held and steps taken to lessen the abuses of the present hospital system. Other systems were discussed, but it was considered best to work in conjunction with the other Branches, and no definite new policy has yet been agreed on by the Committee.

2. *Membership of the British Medical Association.*—The Council have recommended to the boards of the public hospitals that appointments to the honorary staffs should be made from members of the British Medical Association. It was felt that otherwise appointments might be made of practitioners not eligible for membership of the British Medical Association, which would not make for the necessary harmonious working of the honorary staffs.

3. *Hospital Tax.*—The Minister was approached unsuccessfully for relief from hospital tax for members of the honorary staffs at public hospitals.

The Late Dr. W. J. Hancock: Proposed Memorial Tablet at the University.

Members will remember that W. J. Hancock, when Government Electrical Engineer, introduced X rays into Western Australia as early as 1896 and retired as Honorary Radiographer to the Perth Hospital in 1920. As an early X ray worker his services were invaluable to the medical profession in starting and extending the X ray department

which today is paramount and indispensable to our professional work. During the early period of his work, when the dangers of X rays were unknown, Dr. Hancock, as a pioneer, received much damage to his hands and health, a sacrifice which served as a protection to those who followed. The Vice-Chancellor of the University, on behalf of the School of Engineering and Mining, has asked the Association to support them to commemorate the late Dr. Hancock by the erection of a tablet at the University. I appeal to the older members of the Branch, who knew him and had the benefit of his work, and also to the younger members I confidently appeal to honour the memory of this pioneer.

Australasian Medical Congress (British Medical Association), 1932.

Owing to the depression, the invitations issued to members of the profession throughout Australasia have brought very few acceptances, so that the Federal Committee has recommended postponement of the Congress for twelve months.

Public Lectures on Medical Subjects.

Under the rules it is necessary on occasions not otherwise specified for permission to be obtained for a member to lecture on a medical subject. The Council decided that permission will not be given unless: (i) There is no advertising of the lecture; (ii) there is no publication of the lecture under the lecturer's name; (iii) treatment is not discussed; (iv) the audience is restricted to those particularly interested and concerned in the matter of the lecture.

Ethical Complaints.

Much time and consideration have been given to the ethical complaints that have been before the Council. I regret extremely that some members have resigned because the decisions of the Council were not entirely in their favour. Their attitude is hard to understand, seeing that the Council is elected every year by the members.

British Medical Association Chairs.

The Council and the Post-Graduate Committee jointly purchased, reasonably, comfortable chairs, which remain the property of the Branch, though used in the Nurses's Lecture Hall at the Perth Hospital.

Anatomy Act.

The Council had expected to have accommodation in the near future at the University for a dissecting room. The vandalism that burned down the building which was being prepared has postponed—we hope for only a short time—the establishment of an Anatomy Department at the University.

Farmers' Disabilities Commission.

Dr. Aberdeen, on behalf of the Council, appeared before the Commission and produced evidence to show the great hardship many of the country practitioners are suffering from lack of income in this time of depression, and asked that practitioners should be added to the list of preferential creditors.

Medical Treatment of Aborigines.

Much correspondence took place with the Protector of Aborigines, discussing the great injustice that occurs in several districts where the treatment of aborigines is left to the charity of the individual doctor who could ill afford to supply drugs gratuitously.

Honorary Auditors.

You have tonight to elect two auditors for the ensuing year. The Council thank Dr. Randell and Dr. Craig for their services as Honorary Auditors for the past year.

Medical Benevolent Association.

The attention of members is again directed to the claims of this Association. Members are urged to send in their subscriptions, as the present time of depression will increase the demands on the funds.

Office-Bearers.

I declare the office-bearers for 1932 to be as follows:

President: Dr. D. Smith.

Vice-President: Dr. M. K. Moss.

Ex-President: Dr. H. J. Gray.

Honorary Secretary: Dr. L. E. Le Souef.

Honorary Treasurer: Dr. F. L. Gill.

Members of Council (3): Dr. R. H. Crisp, Dr. H. B. Gill, Dr. J. J. Holland.

I take this opportunity to thank all members of the Council and the Assistant Secretary (Mr. N. Hancock) for their loyal support in a most strenuous year. I feel I am making no invidious distinction if I mention in particular Dr. Dixie Clement and Dr. K. Aberdeen.

It is with regret I have to advise you that Dr. Clement decided not to stand for election on the Council. He was President in 1924, fourteen years a member of the Council, and three years Honorary Secretary. He was enthusiastic, a constant attendant, and the members of the Council always found his opinion and advice most valuable. You will therefore appreciate his record service over seventeen years.

Dr. Aberdeen, who was voted to the Council last year and did a very strenuous year's work for the Association, finds it impossible to continue to attend from so far away as Northam. We believe that the Association will not lose his valuable services, as he has been elected Chairman of the Eastern Districts Medical Association.

I have pleasure in welcoming Dr. Donald Smith to the Presidential chair.

BRITISH MEDICAL ASSOCIATION—WESTERN AUSTRALIAN BRANCH.

Balance Sheet for Year ended December 31, 1931.

RECEIPTS.			PAYMENTS.		
	£	s. d.		£	s. d.
December 31, 1930, Bank of New South Wales, Current Account			Printing	37	16 10
December 31, 1930, Invested Funds—			Sundry Expenses	10	10 3
Commonwealth Treasury Bonds	950	0 0	Postages, Telephone <i>et cetera</i> . .	65	10 5
Western Australian Government Bonds	200	0 0	Assistant Secretary's Salary (including service of typist and free office accommodation) . .	75	0 0
Australasian Medical Publishing Company, Limited	300	0 0	Legal Expenses	3	3 0
Bank of New South Wales, Fixed Deposits	858	13 10	Library Expenses	43	15 9
		2,308 13 10	Federal Committee, Western Australian Quota, 1930	24	6 0
Interest received during year—			British Medical Association Chairs (50), Lecture Hall, Perth Hospital	25	0 0
Commonwealth Treasury Bonds	48	12 10	Added to Commonwealth Loans to make £10 Bond	1	2 1
Western Australian Government Bonds	19	10 0	London Office, <i>The British Medical Journal</i> : Placed on Fixed Deposit, Bank of New South Wales, on "London Office" Account	365	11 6
Australasian Medical Publishing Company, Limited	10	0 0	THE MEDICAL JOURNAL OF AUSTRALIA	311	5 3
Bank of New South Wales, Fixed Deposits	42	4 3			963 1 1
Savings Bank Account, Interest to June 30, 1931	3	6 8	Funds on Hand, December 31, 1931—		
Surplus from 1931 Dinner Fund (this fund now credit £3 18s. 9d.)	1	6 6	Commonwealth of Australia 4% Bonds, 1938	200	0 0
Annual Subscriptions		125 0 3	Commonwealth of Australia 4% Bonds, 1941	300	0 0
Refund by Commonwealth for conversion of loans	8	17 11	Commonwealth of Australia 4% Bonds, 1944	460	0 0
To which is added to make £10 Bond	1	2 1	Western Australian Government Bonds	200	0 0
		10 0 0	Commonwealth Savings Bank Australasian Medical Publishing Company, Limited, Debentures	503	6 8
			Fixed Deposits, Bank of New South Wales, 5%, maturing January 3, 1932	200	0 0
			Fixed Deposits, Bank of New South Wales, 5½%, maturing April 18, 1933	600	0 0
					2,763 6 8
			Bank of New South Wales, Current Account	45	13 11
			Cash on hand	11	5 0
					56 18 11
					£3,783 6 8
		£3,783 6 8			

(NOTE: Additional assets held by Branch: 50 chairs at lecture room, Perth Hospital, library books at 260, St. George's Terrace, Epidiascope at Perth Hospital.)

We hereby certify that this Statement of Receipts and Expenditure has been audited and found correct.

(Signed) ALLAN E. RANDALL,

S. E. CRAIG,

Honorary Auditors.

(Signed) F. L. GILL,

Honorary Treasurer.

February 26, 1932.

Election of Auditors.

Dr. S. E. Craig and Dr. T. C. Boyd were appointed Honorary Auditors.

Library Report.

The Library Report was received and adopted. Dr. T. C. Boyd offered to present to the Branch bound volumes of *The Proceedings of the Royal Society of Medicine*. The offer was accepted with thanks.

Medical Benevolent Fund.

The report of the Medical Benevolent Fund was received and adopted. Dr. G. B. G. Maitland was reelected Honorary Secretary and Honorary Treasurer. Dr. J. L. Day was elected as a Councillor. Dr. B. C. Cohen and Dr. T. C. Boyd were reelected Honorary Auditors.

Post-Graduate Committee.

Dr. L. G. Male and Dr. L. A. Hayward, retiring members of the Post-Graduate Committee, were reelected.

Workers' Compensation Act.

Dr. K. G. McK. Aberdeen, after deleting the words "Workers' Compensation Act", in view of the comprehensive nature of the proposal, moved the following motion, which was seconded by Dr. H. J. Gray:

That the British Medical Association, Western Australian Branch, adheres to the principle enunciated by Dr. Brackenbury, that any insurance service scheme, compulsory or voluntary, should adjust its premiums to cover the cost of the benefits to be received. It will object, actively if necessary, to organizers of such benefits making their schemes solvent by exploiting the altruism and charity of the medical profession. This attitude to community schemes in no way affects the ample opportunities for the exercise of altruism by the individual doctor to the individual patient.

Dr. Aberdeen considered that the enunciation of such principles by the profession would strengthen the British Medical Association's position in dealing with any political move against the Association.

The President, Dr. D. Smith, appealed for unity in all matters of policy. This was the only sure foundation on which they as a profession could build.

The motion was carried unanimously.

It was resolved, on the motion of Dr. H. J. Gray, seconded by Dr. F. Gill, that the Council forward a copy of this resolution to the Minister for Works for his information when they thought fit.

It was resolved, on the motion of Dr. M. K. Moss, seconded by Dr. Moule, that a copy of this motion be sent to all members of the Association for their signature signifying their support of this resolution, such copy to be accompanied by a covering letter. In the event of no reply being received, further letters to be sent to obtain replies as soon as possible.

Workers' Compensation Act—Supervision of Medical Accounts: Council's Report.

The Honorary Secretary placed the Council's recommendations concerning medical accounts before the meeting.

The Council considered the Special Medical Committee should be retained to consider all medical accounts in dispute and to maintain the dignity of the profession by checking members who are inclined to be unreasonable in their charges. Also the Council recommended that as the underwriters are not availing themselves of the Special Medical Committee's decisions, but referring doctors' accounts to their individual medical officers, that all practitioners be advised that when accounts are so referred to them, to pass what accounts they like as reasonable, but when disagreeing with a doctor's account, to do so without

comment and refer it to the British Medical Association Special Medical Committee, whose decisions the Association is prepared to support.

It was moved to Dr. L. E. Le Souef, seconded by Dr. T. C. Boyd, that these recommendations be adopted.

Centenary Meeting, London.

Members were notified of the Centenary Meeting in London, and any visiting England were asked to inform the Honorary Secretary immediately.

Agenda Paper.

It was moved by Dr. R. D. McK. Hall, seconded by Dr. H. J. Gray, that a *précis* of matters of general interest to members arising at either general or Council meetings be placed on the agenda papers of the succeeding meetings.

Vote of Thanks.

On the motion of Dr. D. Smith, seconded by Dr. D. D. Paton, a vote of thanks and appreciation was unanimously passed to the retiring President, Dr. H. J. Gray.

The President, supported by the members, thanked Dr. Bentley for his kindness in entertaining them once more.

Post-Graduate Work.**POST-GRADUATE COURSE IN BRISBANE.**

THE annual post-graduate course will be held in Brisbane from May 23 to 27, 1932. The following syllabus has been issued.

Monday, May 23, 1932.

- 9 a.m. to 10.30 a.m.—Operations, Dr. E. S. Meyers: Brisbane Hospital.
- 11 a.m. to 12 noon.—Dr. B. B. Barrack: "Dermatological and Specific Lesions", Brisbane Hospital.
- 2 p.m. to 2.30 p.m.—Demonstrations, Dr. M. Geaney: Injection treatment of varicose veins, Mater Misericordiae Public Hospital.
- 2.30 p.m. to 3.30 p.m.—Operations, Dr. H. V. Foxton: Removal of tonsils and adenoids (adults), Mater Misericordiae Public Hospital.
- 3.30 p.m. to 4.30 p.m.—Operations, Dr. Arthur Murphy: Removal of tonsils and adenoids (children), Mater Misericordiae Children's Hospital.
- 4.30 p.m. to 5.30 p.m.—Lecture, Dr. J. G. Edwards: "Radiology of Bone Diseases", B.M.A. Rooms.
- 8 p.m.—Dance and bridge party, Lennon's Hotel.

Tuesday, May 24, 1932.

- 9 a.m. to 10.30 a.m.—Operations, Dr. Neville Sutton: Rectal surgery, Brisbane Hospital.
- 11 a.m. to 12 noon.—Demonstration, Dr. A. Livingstone: Fractures of the jaw, Brisbane Hospital.
- 2.30 p.m. to 3.30 p.m.—Operations, Dr. K. Green: Removal of tonsils and adenoids (children), Hospital for Sick Children.
- 4 p.m. to 5.30 p.m.—Lecture, Dr. J. G. Edwards: "Gastro-Intestinal Radiography", B.M.A. Rooms.
- 8.15 p.m.—Lecture, Dr. J. F. Mackeddle: (i) "Headache", (ii) "Sciatic Pain", (iii) "Neurological Gaits", Geological Theatre, University.

Wednesday, May 25, 1932.

- 9 a.m. to 11 a.m.—Operations, Dr. L. M. McKillop: Malignant disease, Mater Misericordiae Public Hospital.
- 11.30 a.m. to 1 p.m.—Demonstration, Dr. A. V. Meehan: Infantile paralysis, Mater Misericordiae Children's Hospital.
- 4.30 p.m. to 5.30 p.m.—Lecture, Dr. J. G. Edwards: "Chest and Gall Bladder Radiography", B.M.A. Rooms.
- 8.15 p.m.—Lecture, Dr. C. W. B. Littlejohn: "Backache: Its Clinical Features", Brisbane Hospital.

Thursday, May 26, 1932.

- 10 a.m.—Lecture, Dr. C. W. B. Littlejohn: "Fractures Below the Elbow and Knee", Brisbane Hospital.
 3 p.m.—Lecture, Dr. J. F. Mackeddie: "Clinical Aspects of Heart Disease", Geological Theatre, University.
 7.15 p.m.—Annual dinner, Queensland Branch, Rowe's Banquet Hall.

Friday, May 27, 1932.

- 10 a.m.—Lecture, Dr. J. F. Mackeddie: "Newer Developments in Diagnosis and Treatment of Pulmonary Disease", Geological Theatre, University.
 3 p.m.—Lecture, Dr. C. W. B. Littlejohn: "Flat Foot", Brisbane Hospital.
 8.15 p.m.—Bancroft Memorial Lecture, Professor W. A. Osborne: "The Price of Progress", Geological Theatre, University.

POST-GRADUATE COURSES IN MELBOURNE.

The Melbourne Permanent Post-Graduate Committee announces that the annual refresher course will be held from November 7 to 19, 1932. It will be conducted on the usual lines. The fee for the course will be three guineas. Accommodation will be available for a limited number of graduates at the Melbourne and Alfred Hospitals at an additional fee of three guineas per week. Those wishing to take advantage of this provision are asked to notify the Honorary Secretary of the Committee as soon as possible; accommodation will be allotted in the order of application. The details of the course will be announced at a later date.

During the same period a post-graduate course in obstetrics will be held at the Women's Hospital, Melbourne. The course will comprise attendance in all departments of the hospital and special lectures and demonstrations will be given by members of the staff. Arrangements have been made whereby a limited number of graduates will be able to enter into residence at the hospital. The fee for the course will be three guineas. The additional fee for accommodation at the hospital will be three guineas per week.

Correspondence.

THE VICTORIAN MEDICAL SCHEMES.

SIR: I would be glad if you could make room in your correspondence for the following.

The time has come when our legislature in Victoria is considering the introduction of a scheme for the so-called financing of the public hospitals in this State. The other side of this question, and its natural corollary, is that more people are to be encouraged to use the big institutions. This in turn means more work for the public hospital staffs and less work for them to do in private. Further, the time has come when a large percentage of our community is in need of other commodities of life besides medical attention, namely, housing, food, heat and other things just as necessary as medicine, and in fact things which if they do not have them, will cause disease and suffering. The State has seen its way fit to supply these commodities either in kind or in money with which to buy them. No one has even suggested that they should be provided free. Why, then, should medical services be provided free? In the days when the so-called destitute poor were few and far between, the medical profession did not mind, in fact were anxious to treat them for nothing and public hospitals were formed for the purpose. Of late years the public hospitals have been patronized by many who could pay something and by quite a few who could pay full fees, and still the pernicious system goes on; now possibly to be extended.

Surely as a profession we should not be backward in asking for what is due, and that is some remuneration

or, if the word "honorary" is so much cherished, an honorarium for public hospital work. This can come from the State, which provides those other necessities, or from the hospital itself in the form of a percentage of total moneys paid to the hospital. One public hospital in England with which I was associated paid 10% of its total takings to the medical staff as an honorarium, and it amounted to approximately £400 *per annum* per doctor. If there be any deficiency then in the hospital accounts let the hospital collect more from the patients, which is likely to force more patients to consult what used to be "their own doctor". Alternatively, let any new scheme find the money necessary to do this.

The patient, no matter how poor, does not expect "free" housing, food or fuel, but can certainly expect the State to provide them, and we should not any longer let him expect or receive free medical attention, but let him look to the State for it also, and as the public hospital already receives a State grant, let that be one means by which the staff get remunerated for their services.

In the last issue of *The British Medical Journal* to reach Australia, that of March 5, we even find the Joint Committee of the British Medical Association and Hospitals advising that any contributory scheme should provide: "(i) for the cost of maintenance of patients, and (ii) for a contribution towards the remuneration of the visiting medical staffs of the hospital or hospitals concerned."

This gives us a way out of the old boggy that the British Medical Association does not like to see its members paid for services rendered, gives us a chance to collect something long since overdue, for public hospital service, gives a chance of the patient being asked for more money when he attends a public hospital and thus forcing him to go and see "his own doctor" like he used to do.

Yours, etc.,

HUGH G. MITCHELL.

61, Collins Street,
Melbourne,
April 12, 1932.

DIATHERMY OF TONSILS.

SIR: I have not received any report of unfavourable results and until I do will retire from this correspondence.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne,
April 13, 1932.

MEMORIAL TO SIR ANDREW BALFOUR.

SIR: It has been decided to found a memorial to Sir Andrew Balfour, K.C.M.G., C.B., LL.D., M.D., F.R.C.P., who, it will be remembered, died in January last shortly after the opening of the London School of Hygiene and Tropical Medicine, of which he was the first Director.

When funds are available it is intended to place a simple and inexpensive monument in the School, and with the remainder of the sum received to establish an Andrew Balfour Memorial Fund for helping students, preferably from overseas, to pursue courses of study at the School. We feel that Balfour's many friends all over the world would not wish to miss the opportunity of contributing to such a memorial, and we should therefore be grateful if you would kindly allow this letter to appear in your columns. We are confident that even considerations of hard times, heavy taxation, or other depressing circumstances, will not deter those friends from helping to build up a fund of worthy proportions as a permanent memorial to a magnificent career.

While it is hoped that all who can do so will send a donation in the near future, it is not proposed to limit the period during which the fund will remain open, and promises of donations or bequests will be gratefully acknowledged.

Contributions should be sent to the Honorary Treasurer, Andrew Balfour Memorial Fund, London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.

Yours, etc.,

JAMES CRICHTON-BROWNE, JAMES CURRIE,
M. H. G. FELL, W. H. N. GOSCHEN,
D. LYALL GRANT, W. W. JAMESON, P. S.
LELEAN, LLOYD, MONTAGU NORMAN, W.
ORMSBY-GORE, A. T. STANTON, HENRY S.
WELLCOME, C. M. WENYON, REGINALD
WINGATE.

London School of Hygiene and Tropical Medicine.

"CONSULTING CHEMISTS" AND THE DEATH RATE.

SIR: Today I was called urgently to a domestic tragedy in which a man had died suddenly at the lunch table.

Though sixty-nine, he had never had a serious illness. The fact of his mother dying only the previous week appeared to hold promise of longevity.

Every week he visited his sister and cut her lawn for her "to keep in training". The last time he cut this lawn over-vigorously he felt a pain in the fingers of the left hand, which passed up his arm to his left breast, where it gripped him. He went to a chemist and got a bottle of "physic" and a liniment for neuritis, and resumed his mowing activities for the last time. What years of life were lost here for want of a word in season?

Last week I was called to a case of strangury, the urine being solid with albumin. At Christmas time this patient had frequency and had been treated by a chemist with "sweet spirits of nitre" for two months.

Several weeks ago another patient awoke at 3 a.m. with great nausea and distress. He drove to business after vomiting half a pint of "tarry substance". A city chemist consulted diagnosed ptomaine poisoning and gave him a calomel draught. Having no advice, the patient helped the dustman out with the bin on returning home, nearly dying in a state of collapse soon after.

To finish the series, a boy some time ago developed abdominal colic and took "Aspros" for four days. The relief so tendered allowed the appendix to reach the gangrenous stage with peritonitis.

Such experiences, which constantly jar on those with the imagination to realize their significance, lead me to ask a series of questions:

1. Could not there be drawn up a list of symptoms which the chemist must not treat, with legal penalties, just as there is a dangerous drug list?

This to be hung by law in a prominent place in the chemist's shop.

"Protection of the Sick Act", Australia, 1932 (. . . A.D. 2000).

Chemists or unqualified practitioners must not treat under penalty:

Frequency of passing water.

Pain in the abdomen.

Inflammation of the eye.

Pain over the heart extending to arm *et cetera*.

Here medical science makes contact with semi-official quackery which, being semi-official and already under law at present, can be dealt with. Succeed here and the indirect question of the elusive and unofficial quack will be automatically eliminated without direct attack, with justifiable benefit to orthodox pharmacy.

No one wishes the sufferer from constipation *et cetera* to visit the medical man if there are no other suggestive symptoms, and a hard and fast line is difficult or impossible to draw. But such a list is the best alternative.

2. Is the medical attendant justified in withholding a death certificate in cases who lose years of life from abuse of the privilege of a limited knowledge of pharmacy? I am prepared to do so in the next case.

3. Is the gratification of saving life solely capable of response in the medical mind, when such is achieved through medical or surgical prowess? The truth is, most

reforms are only achieved by persistence, where superstition, rather than logic, is concerned.

4. As a large body of chemists personally admit that they are opposed to the practice of self-constituted "consulting chemists", yet are forced to compete with these semi-qualified and non-qualified exploiters, could this letter be forwarded to the *Pharmacy Journal* for quotation and action in the interests of both professions and the public?

Yours, etc.,

F. L. TRINCA.

Balaclava Road,
Caulfield,
Victoria,
Undated.

THE USE OF CARBON DIOXIDE IN INDUCTION OF ANÆSTHESIA.

SIR: I am writing this in bed; they have leg-roped me all right for the next month—not permitted to do anything. The fact is my old heart appears to have kicked against the pricks.

For some time past I have thought more than once that things were not all they should be, but put the pains down to possible indigestion or gastric trouble.

The attacks are anginal in character, last about five to ten minutes, but are a little bit of hell, at times, in their severity. They are generally accompanied by one very interesting symptom, severe pain at the back of the right hand and sometimes also at the right elbow; the acute pain passes off with the attack, but leaves a feeling of tenderness in the back of the hand. This gradually disappears and I feel my old self once again.

What I regret is that I have not been able to get a cardiograph tracing whilst one of these attacks is on. Some months ago I went through a series of carbon dioxide inductions. I had three at the hands of three separate men at intervals of some days between each induction.

The interesting part is this, that after each induction I felt that a bit of a strain had been thrown upon my heart. It was entirely different from anything that I had felt under any other form of induction. I cannot explain it better than to say that my heart felt uncomfortable. This was so marked after the third experience that I went up to see a heart specialist, and he told me that he could not make out any special feature or abnormality.

A little later pains came on now and again, sometimes at intervals of some days. The pains have been more frequent lately, with the result that I am ordered to lie low for a month.

I am certain that these carbon dioxide inductions may be a source of very grave danger to patients. In, say, 999 cases out of 1,000, no harm happens or appears to happen, at least, at the time. Nothing will, however, convince me that any induction which gives rise to these marked respiratory excursions, such as are seen with carbon dioxide inductions (excursions which grow rapidly in extent and depth), is not a very possible danger to the patient, especially in anyone past middle age, or in an individual with a heart in any way below par.

As I have repeated so often, patients should be led and not uppercut into a stage of surgical anaesthesia. It really does not matter how bad a patient's heart may be, provided a patient is led into an anaesthetic sleep. There is really no more strain thrown upon the heart than in going to sleep, especially so in the case of a patient who has received correct but not over-premedication prior to induction.

Rush inductions are an indication of bad work. I will admit that rush inductions are sometimes the fault of an impatient surgeon, and impatient surgeons are not unknown in our profession, especially if they have a reputation as skilful operators.

Yours, etc.,

R. W. HORNABROOK.

Post scriptum: The X rays reveal dilatation of the aorta.
R.W.H.

Books Received.

- FLYNN OF THE INLAND, by I. L. Idriess, with Forewords by S. Kidman and R. G. Macintyre; 1932. Australia: Angus and Robertson, Limited. Crown 8vo., pp. 315. Price: 6s. net.
- ADVICE TO THE EXPECTANT MOTHER: FIFTY ANTENATAL TALKS FOR THE USE OF DOCTORS, NURSES AND EXPECTANT MOTHERS, by G. T. Birdwood, M.A., M.D., D.P.H.; 1932. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 93. Price: 2s. 6d. net.
- HANDBOOK OF MEDICINE FOR FINAL YEAR STUDENTS, by G. F. Walker, M.D., M.R.C.P.; 1931. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 255. Price: 10s. 6d. net.
- POCKET MONOGRAPHS ON PRACTICAL MEDICINE: ACUTE OTITIS MEDIA, by W. M. Mollison; 1932. London: John Bale, Sons and Danielsson, Limited. Foolscap 8vo., pp. 71. Price: 2s. 6d. net.

Diary for the Month.

- MAY 10.—New South Wales Branch, B.M.A.: Ethics Committee.
- MAY 12.—New South Wales Branch, B.M.A.: Clinical Meeting.
- MAY 13.—Queensland Branch, B.M.A.: Council.
- MAY 17.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- MAY 18.—Western Australian Branch, B.M.A.: Branch.
- MAY 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
- MAY 25.—Victorian Branch, B.M.A.: Council.
- MAY 26.—South Australian Branch, B.M.A.: Branch.
- MAY 26.—New South Wales Branch, B.M.A.: Branch.
- JUNE 1.—Western Australian Branch, B.M.A.: Council.
- JUNE 1.—Victorian Branch, B.M.A.: Council.
- JUNE 2.—South Australian Branch, B.M.A.: Council.
- JUNE 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments.

Dr. J. A. Rolland (B.M.A.) and Dr. A. J. Gluyas have been appointed members of the Board of Optical Registration, South Australia.

Dr. B. A. Baker (B.M.A.) has been appointed Certifying Medical Practitioner at Clunes, Victoria, pursuant to the provisions of the *Workers' Compensation Act*, 1928.

Dr. G. G. Nicholls has been appointed acting Government Medical Officer, Victoria.

Dr. M. G. Wilson (B.M.A.) has been appointed Government Medical Officer at Wyong, New South Wales.

Dr. J. Dale (B.M.A.) has been appointed a Member of the Dental Board of Victoria, pursuant to the provisions of Section 38 of the *Medical Act*, 1928.

Dr. N. G. Hill has been appointed a Resident Medical Officer at the Adelaide Hospital, South Australia.

Dr. B. Smeaton (B.M.A.) has been appointed a Member of the Advisory Committee under the provisions of the *Hospitals Act Amendment Act*, 1921, South Australia.

Dr. W. I. Crowther (B.M.A.) has been appointed Secretary to the Medical Council of Tasmania.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

AUSTIN HOSPITAL FOR CHRONIC DISEASES, HEIDELBERG, VICTORIA: Honorary Radiologist.

LAUNCESTON PUBLIC HOSPITAL, TASMANIA: Resident Medical Officer (male).

ROYAL PRINCE ALFRED HOSPITAL, SYDNEY, NEW SOUTH WALES: Medical Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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